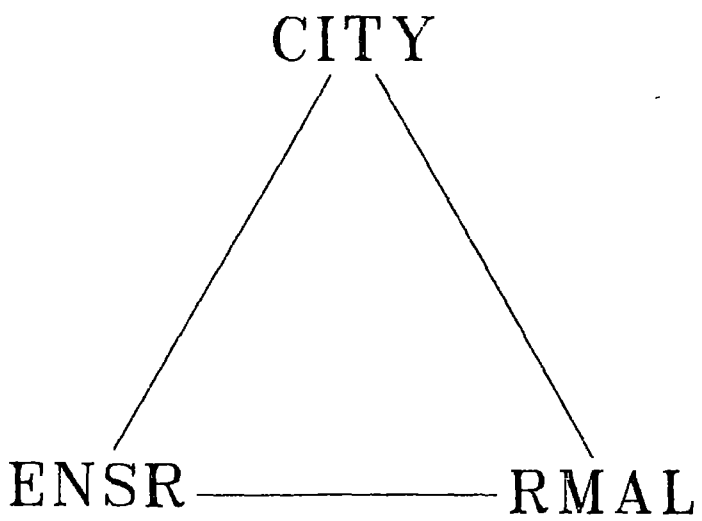
ANNUAL MONITORING REPORT FOR 1991

REILLY TAR & CHEMICAL CORP. N.P.L. SITE ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 16, 1992

ANNUAL MONITORING REPORT
FOR 1991
REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA
SUBMITTED MARCH 16, 1992
(INCLUDES APPENDICES A-C)



(INCLUDES APPENDICES A-C)

CITY OF ST. LOUIS PARK

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 16, 1992

Regional Administrator
United States Environmental
Protection Agency, Region 5
ATTN: Darryl Owens
Mail Code 5HS-11
230 South Dearborn Street
Chicago, Illinois 60604

Director, Solid and Hazardous
Waste Division
Minnesota Pollution Control Agency
ATTN: Site Response Section
520 Lafayette Road North
St. Paul, Minnesota 55155

President
Reilly Industries, Inc.
1510 Market Square Center
151 North Delaware
Indianapolis, Indiana 46204

RE: United States of America, et al. vs. Reilly Tar &
Chemical Corporation, et al.
File No. Civ. 4-80-469

Gentlemen:

Enclosed is the 1991 annual progress report submitted pursuant to Park K of the Consent Decree in the above captioned matter. This report is issued by the City in accordance with Section 2(a) of the Reilly/St. Louis Park Agreement (Exhibit B to the Consent Decree).

Sincerely,

James N. Grube

James N. Grube
Director of Public Works

JNG/cmr
enclosure

cc: William Gregg (w/2 enclosures)
Elizabeth Thompson (w/enclosure)
Reilly File

5005 Minnetonka Boulevard St. Louis Park, Minnesota 55416-2290
Phone: 612-924-2500 Fax: 612-924-2663

ANNUAL MONITORING REPORT

FOR 1991

SUBMITTED TO THE

REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

PURSUANT TO
CONSENT DECREE - REMEDIAL ACTION PLAN
SECTION 3.4

UNITED STATES OF AMERICA, ET AL.

vs.

REILLY TAR AND CHEMICAL CORPORATION, ET AL.

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
CIVIL NO. 4-80-469

MARCH 16, 1992

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1.0 INTRODUCTION

Pursuant to Section 3.4 of the Consent Decree - Remedial Action Plan (CD-RAP) in the case of the United States of America, *et al.* vs. Reilly Tar & Chemical Corporation, *et al.*, this report presents the results of all chemical analyses and water level measurements for calendar year 1991 that are not presented in previous reports.

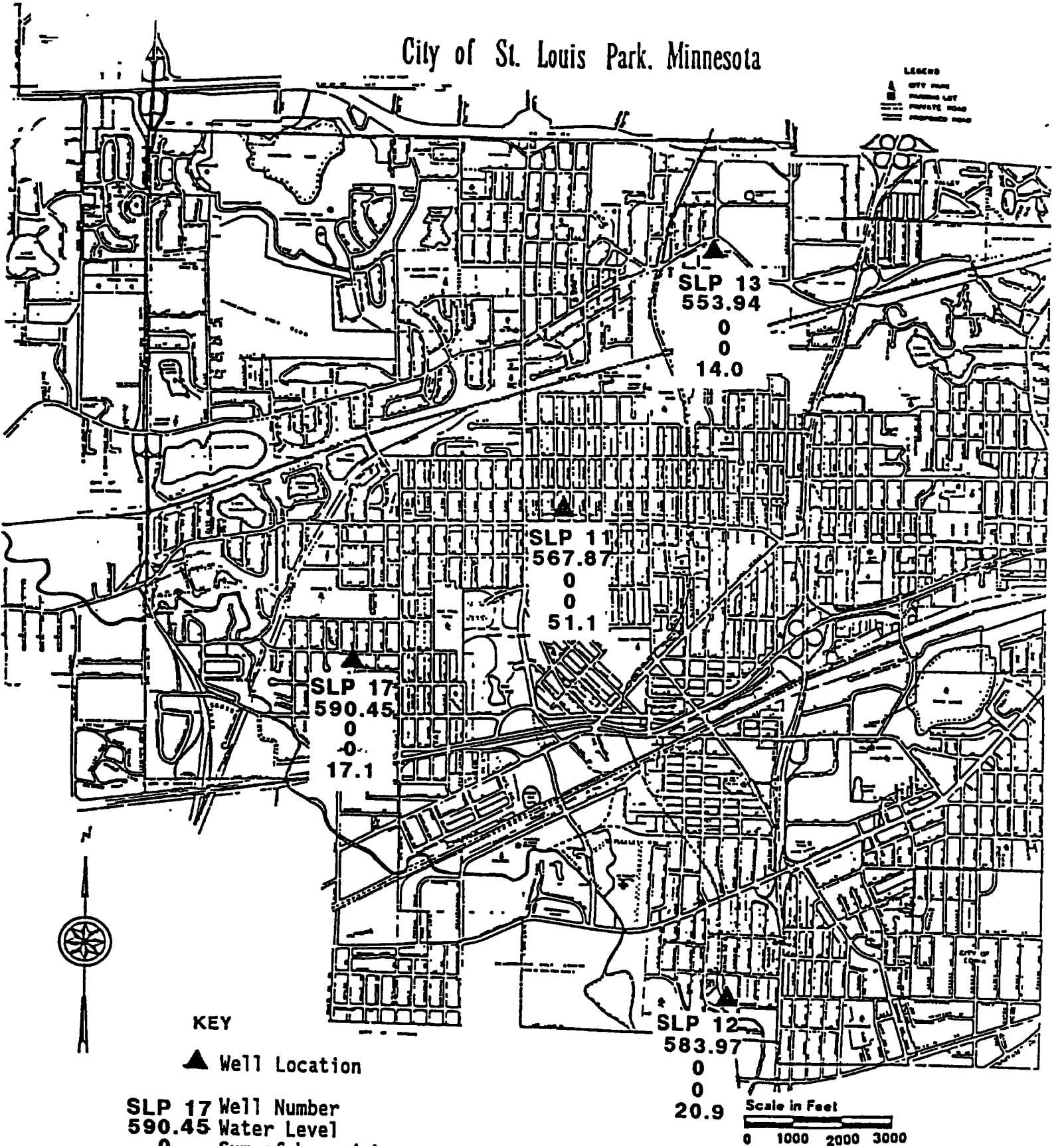
The ground water monitoring conducted in 1991 was performed in accordance with the Sampling Plan submitted in October, 1990. The City of St. Louis Park has overall responsibility for conducting the ground water monitoring required by the CD-RAP. In accordance with the Sampling Plan, the City was assisted in 1991 by ENSR Consulting and Engineering who collected ground water samples from monitoring wells, and by Rocky Mountain Analytical Laboratory (RMAL) who performed the analyses for PAH and phenolics.

The 1991 monitoring data are presented separately for each aquifer that was monitored, starting with the Mt. Simon-Hinckley Aquifer, which is the deepest below the ground surface, and ending with the Drift-Platteville Aquifer, which is the uppermost aquifer monitored. A series of maps has been prepared to help present the monitoring data. Maps for the Prairie du Chien-Jordan and St. Peter Aquifers are contained in the pockets of this report.

2.0 MT. SIMON-HINCKLEY AQUIFER

In accordance with RAP Section 5.1, four wells in the Mt. Simon-Hinckley Aquifer were sampled once in 1991. A summary of the analytical data and the water level elevations at the four wells are shown on Figure 2-1. The laboratory reports of the analytical data are included as Appendix A.

The sums of the concentrations of benzo(a)pyrene and dibenz(a,h)anthracene PAH, carcinogenic PAH, and other PAH in each well are below the drinking water criteria for these compounds. The results for all four wells are consistent with historical water quality for the aquifer. It appears that the Mt. Simon-Hinckley Aquifer has not been significantly affected by contaminants originating from the former Reilly Tar & Chemical Corporation (Reilly) site.



Concentration units per ppt

Figure 2-1
Summary of Ground Water Monitoring
Results for the Mt. Simon-Hinckley
Aquifer: 1991

3.0 IRONTON-GALESVILLE AQUIFER

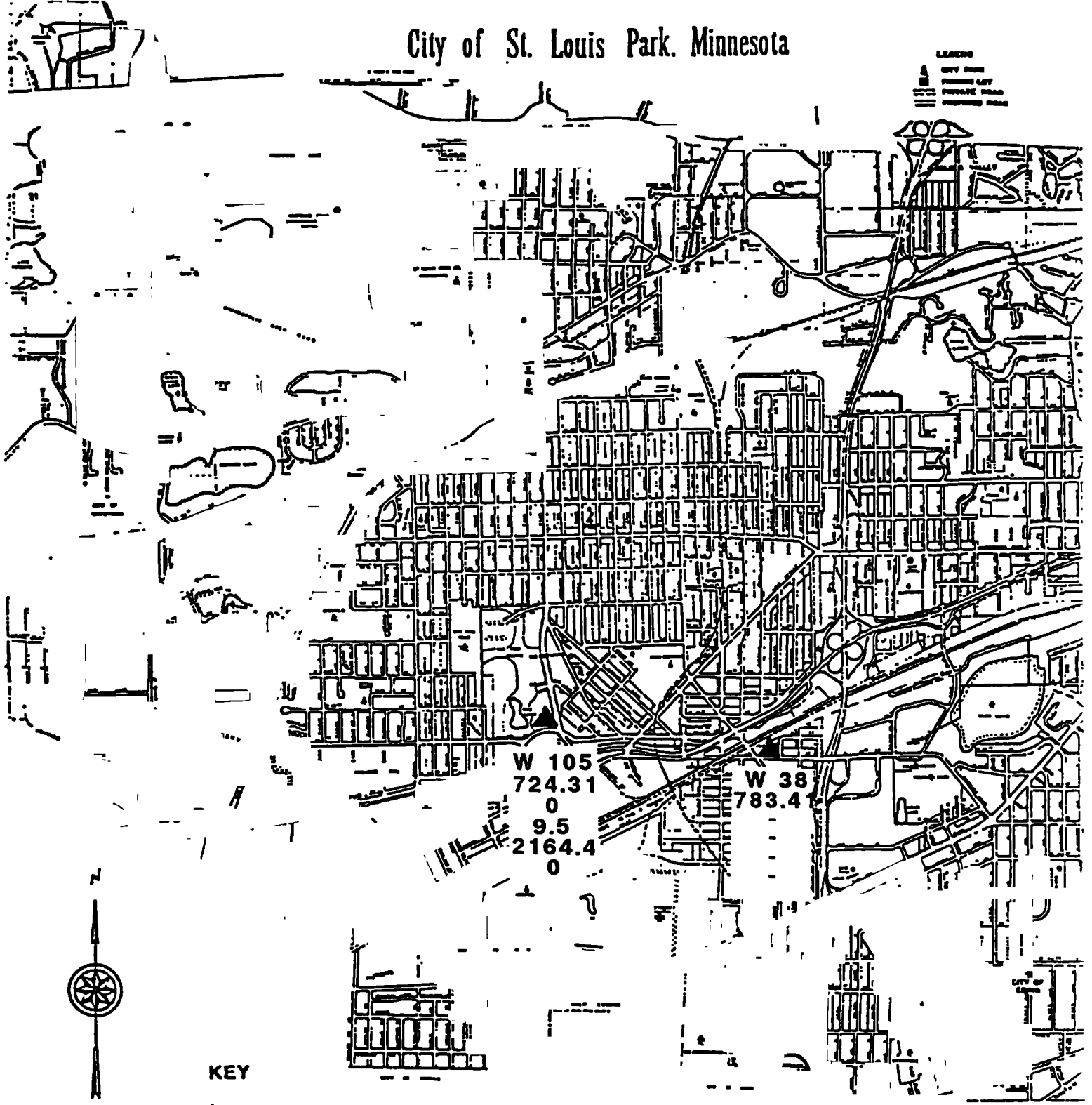
Water quality in well W105 consistently met the criteria for discontinuing the 25 gallons per minute pumping rate, since pumping began in 1987 (Table 3-1). In accordance with the procedures given in CD-RAP Section 6.1.5, and the approval received from MPCA and U.S. EPA on December 4, 1991, well W105 ceased pumping on December 23, 1991. The water quality results for the two sampling rounds conducted in 1991 (Figures 3-1 and 3-2) indicate that the concentrations of PAH remain relatively low in well W105.

Cessation < 10 ug/l
Total PAH

TABLE 3-1

Summary of Total PAH in Well W105
1988 to 1991

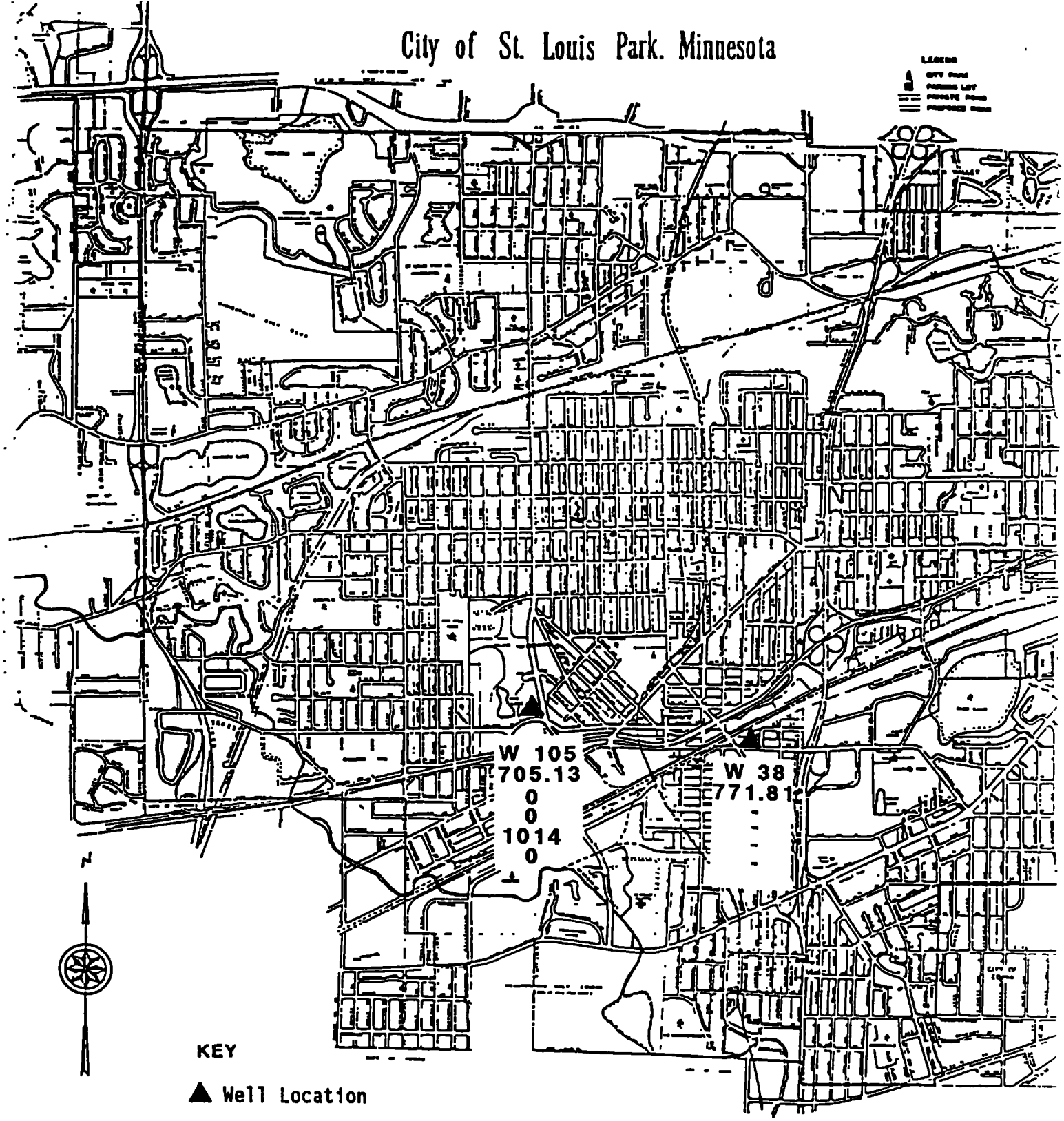
Sampling Date	PAH (ng/l)
February 1988	9000
June 1988	2400
September 1988	3670
December 1988	2035
June 1989	1400
December 1989	1086
March 1990	2347
August 1990	2600
May 1991	2164
August 1991	1014



W 105 Well Number
724.31 Water Level
0 Sum of benzo(a)pyrene and dibenz(a,h)anthracene
9.5 Total Carcinogenic PAH
2164.4 Total Other PAH
0 Total Phenolics

Concentration units per ppt

Figure 3-1
Summary of Ground Water Monitoring
Results for the Ironton-Galesville
Aquifer: First Half, 1991



Concentration units per ppt

Figure 3-2
Summary of Ground Water Monitoring
Results for the Ironton-Galesville
Aquifer: Second Half, 1991

Cessation
< 10 ug/l
Total PAH

4.0 PRAIRIE DUE CHIEN-JORDAN AQUIFER

In accordance with RAP Section 7.3, Prairie du Chien-Jordan Aquifer wells were monitored in 1991 at the frequency identified in the 1991 Sampling Plan. In addition to water quality monitoring, ground water elevations were measured at the Prairie du Chien-Jordan Aquifer wells during each sampling round. Wells W119, W48, and H3 were not available for sampling during 1991 because owners have taken these wells out of service.

Summaries of analytical data and ground water elevations for the sampling rounds are shown in Figures 4-1, 4-2, 4-3 and 4-4 (in pockets). The figures show that ground water flow in the aquifer is highly variable, depending on which combination of wells are pumping as measurements are made. The laboratory reports of the analytical data are presented in Appendix C. Table 4-1 presents a summary of 1989, 1990, and 1991 analytical results for Prairie du Chien-Jordan Aquifer wells. In 1991, Other PAH were detected in concentrations ranging from 12.1 ppt (well E13) to 91,200 ppt (well W23). A total of seven wells exceed the drinking water criterion for Other PAH (W23, SLP10, W402, W403, W29, W40, and W70).

The levels of total carcinogenic PAH detected range from 1.1 to 48.8 ppt; however, the levels of carcinogenic PAH in municipal drinking water wells remain below the drinking water criteria.

The results for wells W402 and W403 exceeded the drinking water criteria for PAH. Other monitoring wells between the Reilly site and wells W402 and W403 exhibit PAH levels below the drinking water criteria (e.g., see historical data for wells SLP4 and SLP6 on Table 4-1). It is not known if the apparent increase in the levels of PAH in wells W402 and W403 are related to contamination from the Reilly site.

Well W403 is located in Minnekahda Vista Park and has been subject to vandalism on at least two occasions which required cleaning debris from the well. The debris consisted of trash, beer cans, and the bumper posts uprooted from around the well. Extra care was given to redevelop and purge this well, but it is not known if at least a portion of the increase in PAH concentration in well W403 is due to the vandalism.

TABLE 4-1

Summary of Total PAH Analytical Results for Prairie Du Chien-Jordan Aquifer Wells in 1989, 1990, and 1991[a]

	1989				1990				1991			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
W23	120,200	117,600	106,300	-[b]	129,100	-	114,700	68	87,800	71,800	91,200	82,600
W48	-	1640	1850	1130	1690	1809	4588	-	-	-	-	-
SLP6	-	58	36	40	45	82	117	68	63.4	77.8	123.3	-
SLP7	-	61	25	25	43	49	93	48	50.1	37.2	64.8	-
W406	-	36	-	26	-	51	134	-	-	31.0	41.7	-
E2	-	21	8	-	-	25	14	-	-	16.8	25	-
E13	-	20	6	-	-	13	25	-	-	12.1	13	-
H3	-	93	370	-	-	188	5300	-	-	-	-	-
SLP15	-	4030	-	-	-	-	-	-	-	-	-	-
SLP10	-	-	-	5120	-	5403	7386	-	-	320.5	4370	-
SLP14	-	134	84	-	98	-	145	-	-	100	18.9	-
SLP16	-	28	24	-	-	-	-	59	-	33.5	64	-
W402	-	-	-	151	-	767	149	-	-	514	18,320	-
W403	-	1020	177	-	-	-	1150	-	-	1086	11,570	-

TABLE 5-1

Summary of Total PAH Analytical Results for St. Peter Aquifer Wells in 1989, 1990, and 1991[a]

Well	1989		1990		1991	
	First Round (June)	Second Round (October)	First Round (June)	Second Round (August)	First Round (April)	Second Round (August)
SLP3	9.6	15	33	19	-[b]	24
W24	-	-	-	-	4023	4160
W33	-	-	-	290	17,912	9921
W122	163	2246	990	133	796	863
W129	601	40	143	96	190	430
W133	37,870	21,370	19,448	14,030	2591	4610
W408	150	110	24	158	358	1188
W409	630	830	141	243	360	3833
W411	208	460	466	336	408	251
W412	226	130	-	485	1524	5283
P116	83	43	-	22	61	42
W410	425	360	-	-	85	5330

a Results presented are the sum of carcinogenic PAH and other PAH in parts per trillion (ng/l)
b - signifies not sampled

The relative occurrence of individual PAH does not appear to represent any form of trend or pattern. For example, dibenzothiophene found in well W408 at a concentration of 270 parts per trillion during the second round has not been detected in well W409 during the last five sampling rounds. This is unexpected given that the direction of contaminant migration is from the area of well W409 toward well W408.

The 1991 analytical results for well W412 are approximately one order of magnitude higher than the results from the previous two years. This well is relatively close to well W133, which has historically had the highest total PAH concentrations monitored in the St. Peter Aquifer. There is no apparent cause for the large decrease in total PAH concentration at well W133 coupled with the large increase at well W412.

The increase in total PAH concentration at well W410 is probably explained by the operation of this well to control the hydraulic gradient in the St. Peter Aquifer. This well is expected to control the flow of ground water through the area of the aquifer represented by the water quality in wells such as W33 and W24. The total PAH concentrations in well W410 may increase to over 10,000 parts per trillion in response to the operation of the well.

In conclusion, the extreme variability in the 1991 sampling results for the St. Peter Aquifer prevent a clear interpretation of the current extent of contamination, or of water quality changes in the aquifer. The operation of well W410 does appear to be effective in controlling the flow of ground water as evidenced by the 1991 water quality changes, and the water level contours shown in Figures 5-1 and 5-2. Continued monitoring in accordance with the 1992 Sampling Plan is needed to further evaluate water quality in the St. Peter Aquifer.

6.0 DRIFT-PLATTEVILLE AQUIFER

The ground water monitoring for the Drift-Platteville Aquifer in 1991 consisted of quarterly PAH and phenolics monitoring of wells W420, W421, and W422, the Drift-Platteville Aquifer source and gradient control wells. Wells W420, W421, and W422 have been monitored quarterly since they began pumping in 1987. The monitoring data are presented on Figures 6-1, 6-2, 6-3, and 6-4. The laboratory reports of the analytical data are included in Appendix E.

The PAH and phenolic data are summarized in Table 6-1. Table 6-1 shows that near the source of contamination, PAH concentrations in ground water are consistently in the range of several hundred micrograms per liter to low milligrams per liter. The trends of these data suggests that while contaminant levels have fluctuated approximately 10 percent in the past three years, the overall levels can be described as stable.

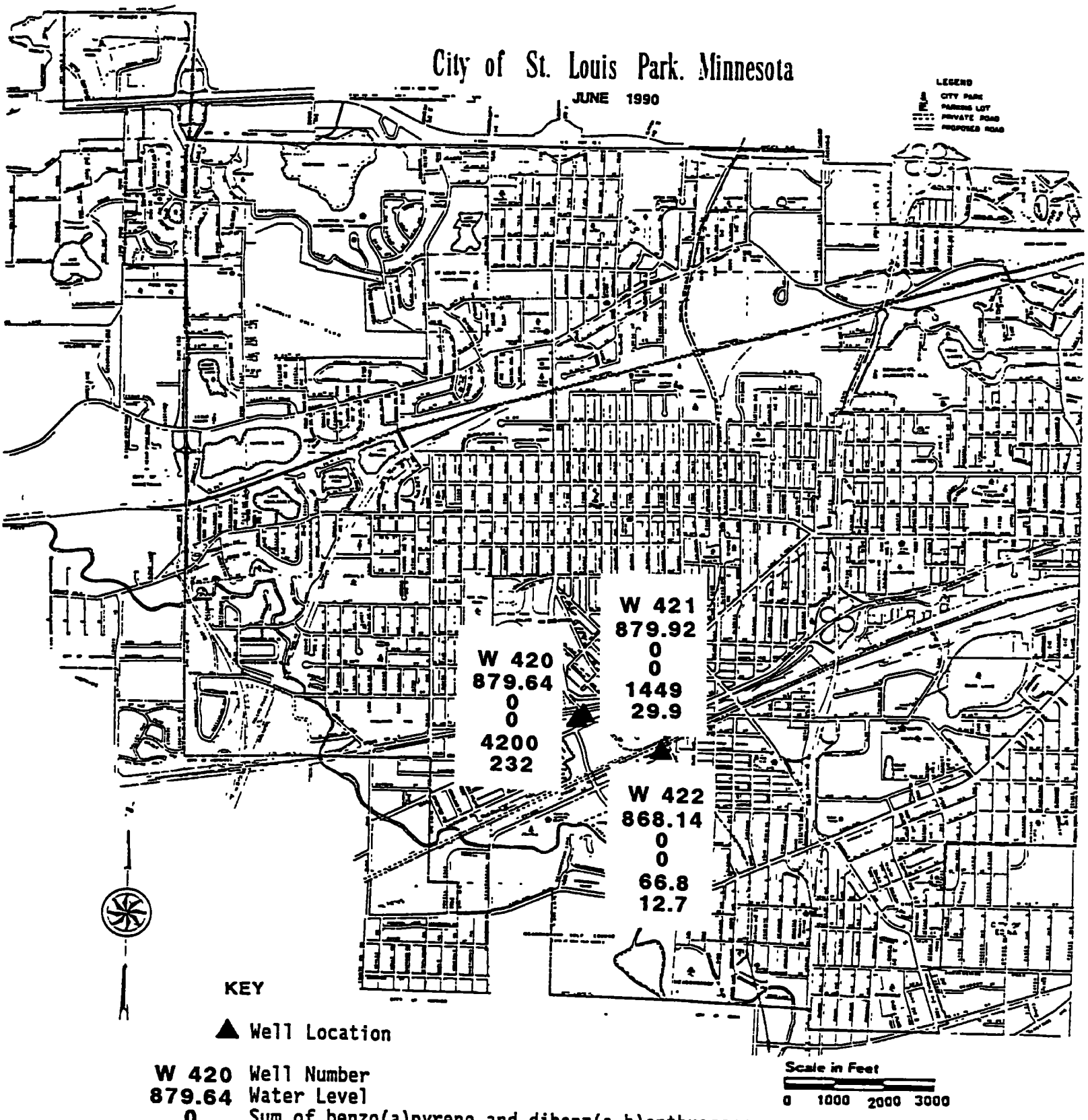
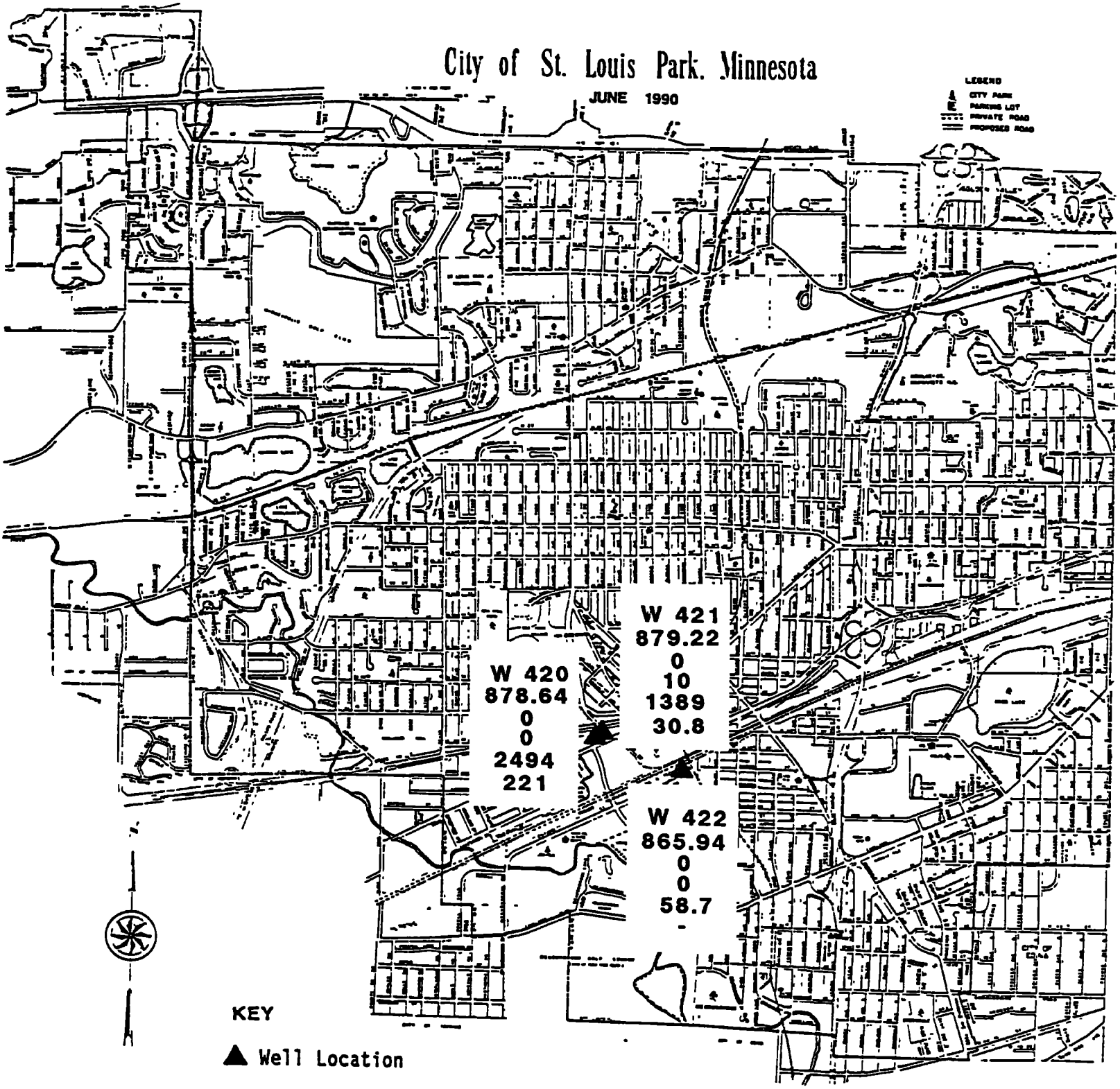


Figure 6-1
Summary of Ground Water Monitoring
Results for the Drift-Platteville Aquifer
First Quarter, 1991



W 420	Well Number
878.64	Water Level
0	Sum of benzo(a)pyrene and dibenz(a,h)anthracene
0	Total Carcinogenic PAH
2494	Total Other PAH
221	Total Phenolics

Concentration units per ppb

Figure 6-2
Summary of Ground Water Monitoring
Results for the Drift-Platteville Aquifer
Second Quarter, 1991

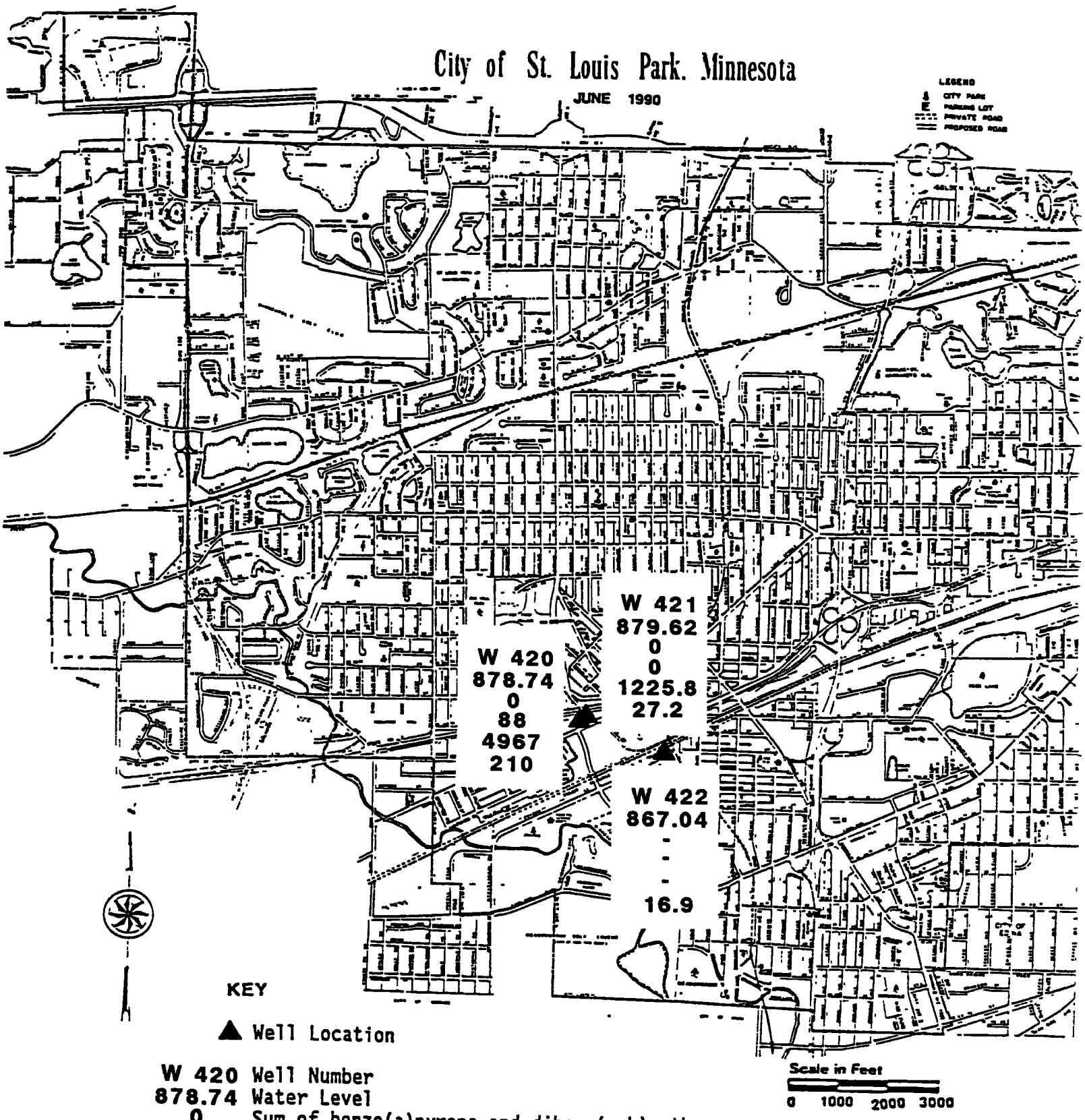
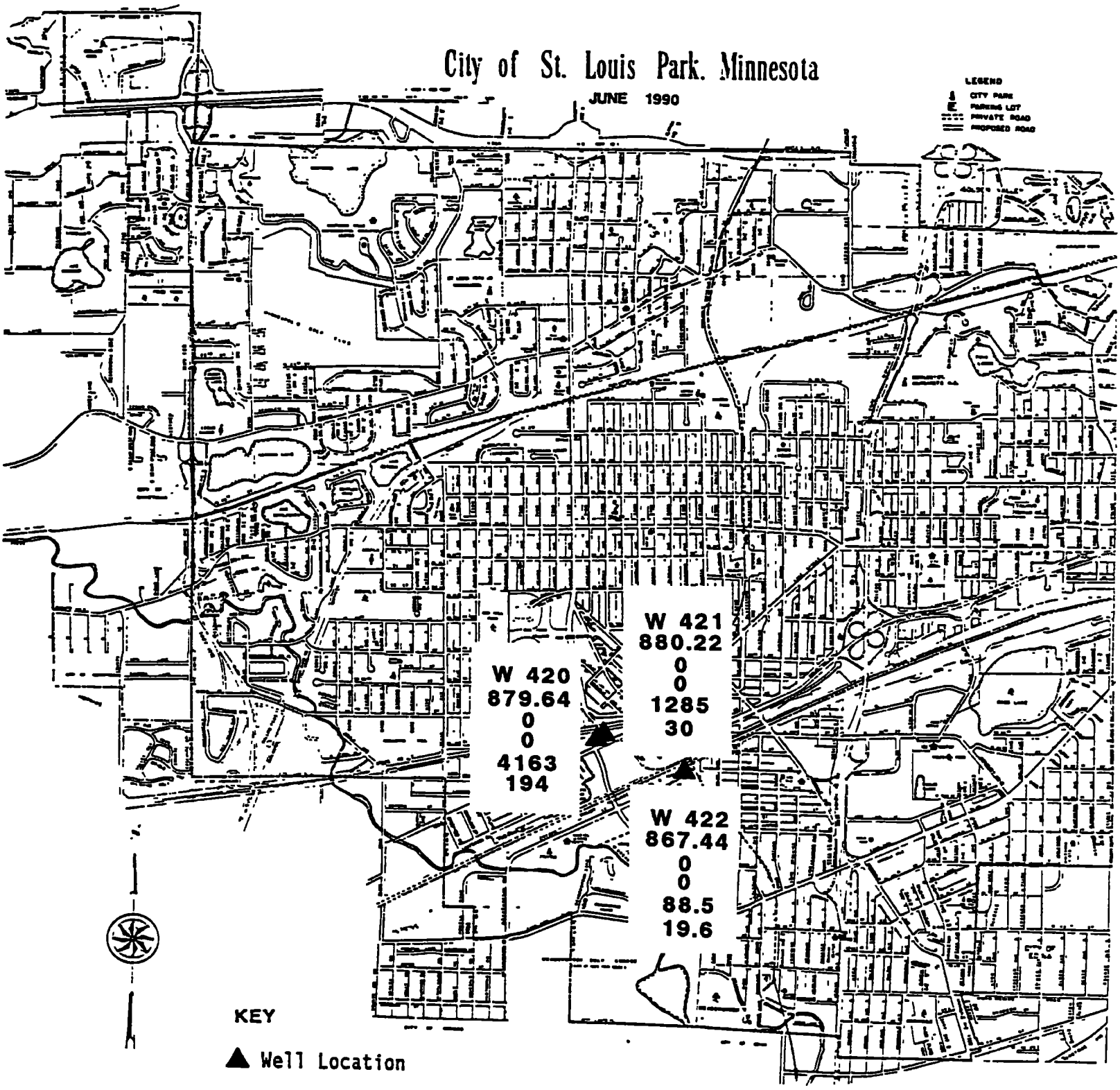


Figure 6-3
Summary of Ground Water Monitoring
Results for the Drift-Platteville Aquifer
Third Quarter, 1991



Concentration units per ppb

Figure 6-4
Summary of Ground Water Monitoring
Results for the Drift-Platteville Aquifer
Fourth Quarter, 1991

TABLE 6-1

Summary of Analytical Resuls for W420, W421, and W422 1988 through 1991

Date	Total PAH (µg/ℓ)	Phenols (µg/ℓ)
W420		
August 1988	4200	200
October 1988	1100	44
March 1989	2400	120
June 1989	3400	130
September 1989	3400	220
December 1989	3400	110
March 1990	3950	240
May 1990	2430	230
August 1990	3150	245
December 1990	3030	230
March 1991	4200	230
June 1991	2500	220
September 1991	5000	210
October 1991	4200	190
W421		
August 1988	760	300
October 1988	1100	35
March 1989	880	30
June 1989	1000	30
September 1989	1000	35
December 1989	730	30
March 1990	1420	35
May 1990	715	30
August 1990	1410	40
December 1990	1145	30
March 1991	1400	30
June 1991	1400	31

TABLE 6-1

Summary of Analytical Resuls for W420, W421, and W422 1988 through 1991

Date	Total PAH (µg/ℓ)	Phenols (µg/ℓ)
September 1991	1200	27
October 1991	1300	30
W422		
August 1988	77	24
October 1988	50	14
March 1989	50	10
June 1989	50	15
September 1989	60	20
December 1989	50	15
March 1990	75	20
May 1990	60	15
August 1990	90	15
December1990	60	20
April 1991	59	-[b]
September 1991	-	17
October 1991	88	18

a. Total PAH is the sum of carcinogenic PAH and other PAH
b. - signifies not sampled

APPENDIX A

LABORATORY DATA SUMMARY PACKAGE: MT. SIMON-HINCKLEY AQUIFER

MOUNT SIMON-HINCKLEY AQUIFER
PAH QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
SLP11	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
SLP12	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
SLP13	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
SLP17	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 2, 1991

Enseco - RMAL Project Number 014223

Introduction

Thirteen aqueous samples (including MS and MSD) were received at Enseco - Rocky Mountain Analytical Laboratory on March 28, 1991. The samples were logged in under RMAL project number 014223. Sample PCJ-SLP6FBD-032791 (RMAL # 014223-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low and medium level part-per-trillion (PPT) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All the samples and the associated method blank BLK01 show target compounds that do not meet secondary ion confirmation criteria. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 05-02-91
Tracy Conroy
Data Control Supervisor

Approved by: for **Date:** 2 MAY 1991
Joel Holtz
Program Administrator

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014223-0001-SA	PCJ-SLP7-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0002-SA	PCJ-SLP8-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0003-SA	MSH-SLP13-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0004-FB	PCJ-SLP6FB-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0005-FD	PCJ-SLP6FBD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SA	PCJ-SLP6-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-MS	PCJ-SLP6MS-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SD	PCJ-SLP6MSD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0007-SA	PCJ-SLP6D-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0008-SA	IGV-WI05-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0009-SA	MSH-SLP11-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0010-SA	MSH-SLP17-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0011-SA	MSH-SLP12-032791	AQUEOUS	27 MAR 91		28 MAR 91

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-03

Sample wt/vol: 3860 (g/ml) ML Lab File ID: X2970

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.130

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	2.1	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.8	JB*
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.5	U
120-72-9	1H-Indole	2.6	U
91-57-6	2-Methylnaphthalene	3.0	B
90-12-0	1-Methylnaphthalene	1.3	JB*
92-52-4	Biphenyl	4.4	U
208-96-8	Acenaphthylene	1.5	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	J
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	3.0	U
86-74-8	Carbazole	2.0	U
206-44-0	Fluoranthene	1.5	U
129-00-0	Pyrene	1.5	*
56-55-3	Benzo(A)Anthracene	2.6	U
218-01-9	Chrysene	2.9	U
205-99-2	Benzo(B)Fluoranthene	2.6	U
207-08-9	Benzo(K)Fluoranthene	2.4	U
192-97-2	Benzo(E)Pyrene	2.0	U
50-32-8	Benzo(A)Pyrene	2.4	U
198-55-0	Perylene	2.6	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.2	U
53-70-3	Dibenz(A,H)Anthracene	1.7	U
191-24-2	Benzo(G,H,I)Perylene	2.9	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-09

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14233-09

Sample wt/vol: 4100 (g/ml) ML Lab File ID: X2974

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	3.5	
95-13-6	1H-Indene	4.7	
91-20-3	Naphthalene	30	B
4565-32-6	Benzo(B)Thiophene	1.8	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	2.3	B
90-12-0	1-Methylnaphthalene	3.2	B*
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.6	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.4	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.1	J
129-00-0	Pyrene	1.5	*
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-10

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14233-10

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X2975

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	1.4	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	6.3	B
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.2	B*
90-12-0	1-Methylnaphthalene	1.4	JB*
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.8	*
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.2	J
129-00-0	Pyrene	1.8	
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-11

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14233-11

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X2976

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.3	J
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	7.5	B*
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.1	J *
91-57-6	2-Methylnaphthalene	5.3	B
90-12-0	1-Methylnaphthalene	2.3	B*
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	U
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.0	J
129-00-0	Pyrene	1.4	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

APPENDIX B

LABORATORY DATA SUMMARY PACKAGE: IRONTON-GALESVILLE AQUIFER

IRONTON-GALESVILLE AQUIFER
PAH QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W105	03/27/91	14223-BLK03	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
W105	05/01/91	14781-BLK01	IGV-W105D-050191			IGV-W105FB-050191
W105	08/28/91	16727-BLK02	STP-SLP3D-082891	PCJ-SLP6MS-082891	PCJ-SLP6MSD-082891	STP-SLP3FB-082891

PHENOLICS QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W105	03/28/91	14236-BLK	DPV-W422TPD-032891	DPV-W422TPMS-032891	DPV-W422TPMSD-032891	DPV-W422TPFB-032891
W105	06/27/91	15612-BLK	DPV-W421TPD-062791	DPV-W421TPMS-062791	DPV-W421TPMSD-062791	DPV-W422TPFB-062791
W105	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W420TPMSD-091891	DPV-W420TPFB-091891

RAP SECTION 6.1.4. MONITORING

1ST QUARTER - 1991

PAH MONITORING

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 2, 1991

Enseco - RMAL Project Number 014223

Introduction

Thirteen aqueous samples (including MS and MSD) were received at Enseco - Rocky Mountain Analytical Laboratory on March 28, 1991. The samples were logged in under RMAL project number 014223. Sample PCJ-SLP6FBD-032791 (RMAL # 014223-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low and medium level part-per-trillion (PPT) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All the samples and the associated method blank BLK01 show target compounds that do not meet secondary ion confirmation criteria. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 05-02-91
Tracy Conroy
Data Control Supervisor

Approved by: for **Date:** 2 MAY 1991
Joel Holtz
Program Administrator

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014223-0001-SA	PCJ-SLP7-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0002-SA	PCJ-SLP8-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0003-SA	MSH-SLP13-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0004-FB	PCJ-SLP6FB-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0005-FD	PCJ-SLP6FBD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SA	PCJ-SLP6-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-MS	PCJ-SLP6MS-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SD	PCJ-SLP6MSD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0007-SA	PCJ-SLP6D-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0008-SA	IGV-WI05-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0009-SA	MSH-SLP11-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0010-SA	MSH-SLP17-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0011-SA	MSH-SLP12-032791	AQUEOUS	27 MAR 91		28 MAR 91

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-08

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-08

Sample wt/vol: 500 (g/ml) ML Lab File ID: X2982

Level: (low/med) MED Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	390	
95-13-6	1H-Indene	260	
91-20-3	Naphthalene	190	J *
4565-32-6	Benzo(B)Thiophene	130	
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	320	
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	170	
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

PHENOLICS MONITORING

Enseco
A CORNING Company

April 24, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (including QC) received at Enseco-Rocky Mountain Analytical Laboratory on March 29, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Joel E. Holtz
Program Administrator

JH/dk

RMAL #14236

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.:_____ SDG No.:_____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1423601	DPV-W420TP-032891
1423602	DPV-W421TP-032891
1423603	DPV-W422TP-032891
1423603D	DPV-W422TPMSD-032891
1423603S	DPV-W422TPMS-032891
1423604	DPV-W422TPD-032891
1423605	DPV-W422TPFB-032891
1423606	DPV-W422TPFBD-032891
1423607	PCV-W23TP-032891
1423608	IGV-W10STP-032891

Parameters	Method No.	Detection Limits	Source
PPB PHENOLS	420.1	5 ug/L	1

Comments:
FIVE WATER SAMPLES FOR PPB PHENOLS ANALYSIS.
RMA QC#14236

Sources:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 4/19/91

Project# 14236

Samples 01 through 08 were analyzed on 4/01/91. We realize sample 06 is a duplicate of 05 and that this is a field blank. Sample 06 was slightly over the detection limit so we decided to reanalyze the sample on 4/18/91. The result for the latter date was reported. All raw data are included.

Laboratory Supervisor Anne Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"F"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

U.S. EPA - CLP

EPA SAMPLE NO.

1423608

1

INORGANIC ANALYSIS DATA SHEET

0000011

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: IGV-W10STP-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

_____

RAP SECTION 6.1.4. MONITORING

2ND QUARTER - 1991

PAH MONITORING

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014781

Introduction

Nine aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on May 02, 1991. The samples were logged in under RMAL project number 014781. Sample IGV-W105FBD-050191 (RMA # 014781-08) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014781-01 and 02 were reanalyzed at dilutions due to 2,3-dihydroindene, benzo(B)thiophene and acenapthene which were saturated in the original analysis. Both the original and the reanalyses are submitted for each sample. Surrogates could not be measured in the reanalyses due to the dilutions performed.

Due to concentrations of target compounds present in excess of calibration range, samples 014781-03 and 09 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

All samples and one of the the associated method blanks show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Susan Dalla for Date: 6-21-91
Joel Holtz
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014781-0001-SA	W133	AQUEOUS	01 MAY 91	10:50	02 MAY 91
014781-0002-SA	W24	AQUEOUS	01 MAY 91	13:30	02 MAY 91
014781-0003-SA	W33	AQUEOUS	01 MAY 91	16:45	02 MAY 91
014781-0004-SA	IGV-W105-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0005-SA	IGV-W105D-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0006-SA	PCJ-SLP10-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0007-SA	IGV-W105FB-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0008-SA	IGV-W105FBD-050191	AQUEOUS	01 MAY 91		02 MAY 91
014781-0009-SA	W412	AQUEOUS	30 APR 91	16:10	02 MAY 91

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014781

PPT PAH

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St. Louis Park	SAMPLE SAFE™ CONDITIONS
PROJECT: SLP	PACKED BY: M MacDo
SAMPLING COMPANY: ENSR	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
SAMPLING SITE: SLP	SEALED FOR SHIPPING BY: M. MacDonald
TEAM LEADER: M MacDonald	SEAL NUMBER:
	SAMPLING STATUS: ☐ Done ☐ Continuing Until
	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
	SEAL NUMBER:
	CONDITION OF CONTENTS:
	INITIAL CONTENTS TEMP: °C
	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
PV 4/30/91	1610	LW412	WATER	6	PAHs (gpt)	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY:

METHOD OF SHIPMENT: FED EX

AIRBILL NUMBER:

RECEIVED FOR LAB: R.M.A.C.

SIGNED: Justin Chappell

DATE/TIME: 5/2/91 0840

ENSECO PROJECT NUMBER: 1481

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of St. Louis - Park	SAMPLE SAFE™ CONDITIONS: PACKED BY [illegible]		SEAL NUMBER
PROJECT: SLP	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY		CONDITION OF CONTENTS
SAMPLING COMPANY: ENSR	SEALED FOR SHIPPING BY: Diane J. [illegible]		INITIAL CONTENTS TEMP °C
SAMPLING SITE: SLP	SEAL NUMBER: #3	SAMPLING STATUS: ☐ Done ☐ Continuing Until	
TEAM LEADER: M. MacDonald	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C	

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
5/1/91	1050	LW133 01	WATER	6	All (list)	
↓	1330	LW24 02	↓	↓	↓	
↓	1645	LW33 03	↓	↓	↓	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME
Diane J. [illegible]			

SHIPPING DETAILS

DELIVERED TO SHIPPER BY:

METHOD OF SHIPMENT: Federal Express

AIRBILL NUMBER:

RECEIVED FOR LAB: R.M.A.L.

SIGNED: Justin Chappell

DATE/TIME: 5/2/91 0830

ENSECO PROJECT NUMBER: 1478

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	PROJECT:	SAMPLING COMPANY: SAME	SAMPLING SITE: SAME
TEAM LEADER: MJR			

SAMPLE SAFE™ CONDITIONS

PACKED BY: MJR	SEAL NUMBER:	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:	CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY:	INITIAL CONTENTS TEMP: °C	SEAL NUMBER:	SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C		

	DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
7	5-1-91	.	IGV-W105FB-050191	1XL AMBER	4	PPL PAH	SPECIAL FILLING CONDITIONS
8	5-1-91	.	IGV-W105 FBD-050191	1XL AMBER	4	PPL PAH	SPECIAL FILLING CONDITIONS

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MJR		
METHOD OF SHIPMENT: FED EXP	AIRBILL NUMBER: 2865076325	
RECEIVED FOR LAB: R.M.A.C	SIGNED: Justin Chappell	DATE/TIME: 5/2/91 0840
ENSECO PROJECT NUMBER: 1478		

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK		SAMPLE SAFE™ CONDITIONS	
PROJECT		PACKED BY: MZR	SEAL NUMBER
		SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	CONDITION OF CONTENTS
SAMPLING COMPANY: SAME		SEALED FOR SHIPPING BY: MZR	INITIAL CONTENTS TEMP °C
SAMPLING SITE: SAME		SEAL NUMBER	SAMPLING STATUS ☐ Done ☐ Continuing Until
TEAM LEADER: MZR		SEAL INTACT UPON RECEIPT BY LAB ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
4 5-1-91		IGV-W105-050191	1XL AMBER	6	PPL PAH	
5 5-1-91		IGV-W105D-050191	1XL AMBER	6	PPL PAH	
6 5-1-91		PCV-SLP10-050191	1XL AMBER	6	PPL PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR

METHOD OF SHIPMENT: FED EXP

AIRBILL NUMBER: 286507632 5

RECEIVED FOR LAB: R.M.A.L

SIGNED: Justin Chappell

DATE/TIME: 5/2/91 0840

ENSECO PROJECT NUMBER: 14781

ENS—1133

White – CLIENT Pink – LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Final #14781

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14781-04

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-04

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X3055

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/03/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	3.6	J
496-11-7	2,3-Dihydroindene	350	
95-13-6	1H-Indene	220	
91-20-3	Naphthalene	140	B
4565-32-6	Benzo(B)Thiophene	110	
91-22-5	Quinoline	3.8	*
120-72-9	1H-Indole	1.0	J
91-57-6	2-Methylnaphthalene	29	B
90-12-0	1-Methylnaphthalene	290	B
92-52-4	Biphenyl	43	
208-96-8	Acenaphthylene	64	
83-32-9	Acenaphthene	150	
132-64-9	Dibenzofuran	44	
86-73-7	Fluorene	50	
132-65-0	Dibenzothiophene	3.1	
85-01-8	Phenanthrene	51	B
120-12-7	Anthracene	10	
260-94-6	Acridine	13	
86-74-8	Carbazole	82	
206-44-0	Fluoranthene	31	
129-00-0	Pyrene	23	B
56-55-3	Benzo(A)Anthracene	2.0	J *
218-01-9	Chrysene	1.7	J
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

= Compound is saturated.

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14781-05

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-05

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X3056

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/03/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.7	J
496-11-7	2,3-Dihydroindene	430	
95-13-6	1H-Indene	270	
91-20-3	Naphthalene	170	B
4565-32-6	Benzo(B)Thiophene	130	
91-22-5	Quinoline	4.5	*
120-72-9	1H-Indole	1.2	J
91-57-6	2-Methylnaphthalene	14	B
90-12-0	1-Methylnaphthalene	350	B
92-52-4	Biphenyl	53	
208-96-8	Acenaphthylene	81	
83-32-9	Acenaphthene	200	
132-64-9	Dibenzofuran	59	
86-73-7	Fluorene	68	
132-65-0	Dibenzothiophene	5.5	*
85-01-8	Phenanthrene	85	B
120-12-7	Anthracene	15	
260-94-6	Acridine	16	
86-74-8	Carbazole	110	
206-44-0	Fluoranthene	58	
129-00-0	Pyrene	44	B
56-55-3	Benzo(A)Anthracene	2.9	*
218-01-9	Chrysene	2.1	J
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

= Compound is saturated.

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14781-07

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14781-07

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3037

Level: (low/med) LOW Date Received: 05/02/91

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 8.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.2	J
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	3.5	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	5.1	*
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	4.4	B
90-12-0	1-Methylnaphthalene	2.2	B*
92-52-4	Biphenyl	1.1	J
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.7	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.5	B
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

= Compound is saturated.

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL **Contract:**

Lab Code: ENSECO **Case No.:** 14781 **SAS No.:** **SDG No.:**

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	14781-01	85	123	45
2	14781-01DL	D	D	D
3	14781-02	70	144	60
4	14781-02DL	D	D	D
5	14781-03	D	D	D
6	14781-04	82	93	41
7	14781-05	100	120	41
8	14781-06	90	98	43
9	14781-07	76	88	62
10	14781-09	D	D	D
11	BLK01	88	92	80
12	BLK02	90	104	75

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Lab File ID: X3030 Lab Sample ID: BL050591

Instrument ID: 4500-X Date Extracted: 05/05/91

Matrix: (soil/water) WATER Date Analyzed: 05/31/91

Level:(low/med) LOW Time Analyzed: 0014

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14781-01	14781-01	X3031	05/31/91
2	14781-01DL	14781-01DL	X3089	06/05/91
3	14781-02	14781-02	X3032	05/31/91
4	14781-02DL	14781-02DL	X3076	06/04/91
5	14781-03	14781-03	X3075	06/04/91
6	14781-04	14781-04	X3055	06/03/91
7	14781-05	14781-05	X3056	06/03/91
8	14781-06	14781-06	X3036	05/31/91
9	14781-07	14781-07	X3037	05/31/91

Comments:

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3030

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/05/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	3.3	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.8	
90-12-0	1-Methylnaphthalene	2.0	*
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.7	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.1	J
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK02

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Lab File ID: X3039 Lab Sample ID: BL050491

Instrument ID: 4500-X Date Extracted: 05/04/91

Matrix: (soil/water) WATER Date Analyzed: 05/31/91

Level: (low/med) LOW Time Analyzed: 0753

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14781-09	14781-09	X3078	05/31/91

Comments:

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14781 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3039

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/31/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.7	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.8	
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.2	J
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14781 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3029	05/30/91	2300
BLK01	X3030	05/31/91	0014
BLK02	X3039	05/31/91	0753
14781-01	X3031	05/31/91	0107
14781-02	X3032	05/31/91	0158
14781-06	X3036	05/31/91	0522
14781-07	X3037	05/31/91	0612

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14781 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3054	06/03/91	1515
14781-04	X3055	06/03/91	1648
14781-05	X3056	06/03/91	1739

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14781 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3074	06/04/91	1624
14781-03	X3075	06/04/91	1747
14781-02DL	X3076	06/04/91	1840
14781-09	X3078	06/04/91	2027

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14781 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3088	06/05/91	1534
14781-01DL	X3089	06/05/91	1713

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14781

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14781

Instrument ID: 4500-X Calibration Date(s): 05/30/91 Time: 2300

Lab ID: 3029 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.144	-24.3
2,3-Dihydroindene	0.775	0.987	-27.4
1H-Indene	0.776	0.956	-23.2
Naphthalene	1.740	2.108	-21.1
Benzo(B)Thiophene	1.300	1.456	-12.0
Quinoline	0.827	0.937	-13.3
1H-Indole	0.928	0.974	-5.0
2-Methylnaphthalene	0.756	0.827	-9.4
1-Methylnaphthalene	0.810	0.911	-12.5
Biphenyl	1.183	1.273	-7.6
Acenaphthylene	1.534	1.574	-2.6
Acenaphthene	1.057	1.052	0.5
Dibenzofuran	1.376	1.418	-3.1
Fluorene	1.150	1.139	1.0
Dibenzothiophene	0.825	0.781	5.3
Phenanthrene	0.886	0.881	0.6
Anthracene	0.833	0.832	0.1
Acridine	0.534	0.491	8.1
Carbazole	0.701	0.732	-4.4
Fluoranthene	1.006	0.928	7.8
Pyrene	1.123	1.025	8.7
Benzo(A)Anthracene	1.155	1.222	-5.8
Chrysene	1.307	1.287	1.5
Benzo(B)Fluoranthene	1.047	1.159	-10.7
Benzo(K)Fluoranthene	1.423	1.147	19.4
Benzo(E)Pyrene	1.063	1.069	-0.6
Benzo(A)Pyrene	1.020	1.026	-0.6
Perylene	0.715	0.828	-15.8
Indeno(1,2,3-CD)Pyrene	1.196	1.011	15.5
Dibenz(A,H)Anthracene	1.039	0.881	15.2
Benzo(G,H,I)Perylene	1.073	0.953	11.2
D8-Naphthalene	1.578	1.770	-12.2
D10-Flourene	0.936	0.911	2.7
D12-Chrysene	1.143	1.272	-11.3

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14781

Instrument ID: 4500-X Calibration Date(s): 06/03/91 Time: 1515

Lab ID: 3054 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.058	-15.0
2,3-Dihydroindene	0.775	0.932	-20.3
1H-Indene	0.776	0.883	-13.8
Naphthalene	1.740	1.929	-10.9
Benzo(B)Thiophene	1.300	1.359	-4.5
Quinoline	0.827	0.895	-8.2
1H-Indole	0.928	0.877	5.5
2-Methylnaphthalene	0.756	0.815	-7.8
1-Methylnaphthalene	0.810	0.886	-9.4
Biphenyl	1.183	1.261	-6.6
Acenaphthylene	1.534	1.580	-3.0
Acenaphthene	1.057	1.085	-2.6
Dibenzofuran	1.376	1.493	-8.5
Fluorene	1.150	1.228	-6.8
Dibenzothiophene	0.825	0.927	-12.4
Phenanthrene	0.886	0.982	-10.8
Anthracene	0.833	0.891	-7.0
Acridine	0.534	0.530	0.7
Carbazole	0.701	0.786	-12.1
Fluoranthene	1.006	1.059	-5.3
Pyrene	1.123	1.183	-5.3
Benzo(A)Anthracene	1.155	1.231	-6.6
Chrysene	1.307	1.212	7.3
Benzo(B)Fluoranthene	1.047	1.217	-16.2
Benzo(K)Fluoranthene	1.423	1.243	12.6
Benzo(E)Pyrene	1.063	1.059	0.4
Benzo(A)Pyrene	1.020	1.191	-16.8
Perylene	0.715	0.793	-10.9
Indeno(1,2,3-CD)Pyrene	1.196	0.918	23.2
Dibenz(A,H)Anthracene	1.039	0.826	20.5
Benzo(G,H,I)Perylene	1.073	0.901	16.0
D8-Naphthalene	1.578	1.720	-9.0
D10-Flourene	0.936	0.917	2.0
D12-Chrysene	1.143	1.115	2.4

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14781

Instrument ID: 4500-X Calibration Date(s): 06/04/91 Time: 1624

Lab ID: 3074 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.052	-14.3
2,3-Dihydroindene	0.775	0.922	-19.0
1H-Indene	0.776	0.874	-12.6
Naphthalene	1.740	1.886	-8.4
Benzo(B)Thiophene	1.300	1.332	-2.5
Quinoline	0.827	0.793	4.1
1H-Indole	0.928	0.659	29.0
2-Methylnaphthalene	0.756	0.837	-10.7
1-Methylnaphthalene	0.810	0.926	-14.3
Biphenyl	1.183	1.194	-0.9
Acenaphthylene	1.534	1.600	-4.3
Acenaphthene	1.057	1.042	1.4
Dibenzofuran	1.376	1.373	0.2
Fluorene	1.150	1.150	0.0
Dibenzothiophene	0.825	0.804	2.5
Phenanthrene	0.886	0.875	1.2
Anthracene	0.833	0.810	2.8
Acridine	0.534	0.474	11.2
Carbazole	0.701	0.662	5.6
Fluoranthene	1.006	1.044	-3.8
Pyrene	1.123	1.254	-11.7
Benzo(A)Anthracene	1.155	1.106	4.2
Chrysene	1.307	1.071	18.1
Benzo(B)Fluoranthene	1.047	1.177	-12.4
Benzo(K)Fluoranthene	1.423	1.084	23.8
Benzo(E)Pyrene	1.063	0.932	12.3
Benzo(A)Pyrene	1.020	0.940	7.8
Perylene	0.715	0.736	-2.9
Indeno(1,2,3-CD)Pyrene	1.196	0.940	21.4
Dibenz(A,H)Anthracene	1.039	0.864	16.8
Benzo(G,H,I)Perylene	1.073	0.897	16.4
D8-Naphthalene	1.578	1.768	-12.0
D10-Flourene	0.936	0.942	-0.6
D12-Chrysene	1.143	1.026	10.2

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14781

Instrument ID: 4500-X Calibration Date(s): 06/05/91 Time: 1534

Lab ID: 3088 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.015	-10.3
2,3-Dihydroindene	0.775	0.912	-17.7
1H-Indene	0.776	0.862	-11.1
Naphthalene	1.740	1.845	-6.0
Benzo(B)Thiophene	1.300	1.237	4.8
Quinoline	0.827	0.709	14.3
1H-Indole	0.928	0.696	25.0
2-Methylnaphthalene	0.756	0.750	0.8
1-Methylnaphthalene	0.810	0.842	-4.0
Biphenyl	1.183	1.090	7.9
Acenaphthylene	1.534	1.736	-13.2
Acenaphthene	1.057	1.087	-2.8
Dibenzofuran	1.376	1.372	0.3
Fluorene	1.150	1.159	-0.8
Dibenzothiophene	0.825	0.808	2.1
Phenanthrene	0.886	0.884	0.2
Anthracene	0.833	0.825	1.0
Acridine	0.534	0.468	12.4
Carbazole	0.701	0.635	9.4
Fluoranthene	1.006	1.089	-8.3
Pyrene	1.123	1.265	-12.6
Benzo(A)Anthracene	1.155	1.057	8.5
Chrysene	1.307	1.142	12.6
Benzo(B)Fluoranthene	1.047	1.044	0.3
Benzo(K)Fluoranthene	1.423	1.116	21.6
Benzo(E)Pyrene	1.063	0.999	6.0
Benzo(A)Pyrene	1.020	0.964	5.5
Perylene	0.715	0.752	-5.2
Indeno(1,2,3-CD)Pyrene	1.196	0.867	27.5
Dibenz(A,H)Anthracene	1.039	0.773	25.6
Benzo(G,H,I)Perylene	1.073	0.832	22.5
D8-Naphthalene	1.578	1.660	-5.2
D10-Flourene	0.936	0.906	3.2
D12-Chrysene	1.143	1.073	6.1

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14781 SAS No.: SDG No:

Lab File ID (Standard): X3029 Date Analyzed: 05/30/91

Instrument ID: 4500-X Time Analyzed: 2300

	IS#1 (ACN) AREA	#	IS#2 (PHN) AREA	#	IS#3 (BAP) AREA	#
12 HOUR STD	365000		606000		37200	
UPPER LIMIT	730000		1212000		74400	
LOWER LIMIT	183000		303000		18600	
SAMPLE NO.						
BLK01	406000		644000		443000	
BLK02	342000		540000		356000	
14781-01	527000		886000		626000	
14781-02	567000		790000		553000	
14781-06	391000		576000		458000	
14781-07	428000		635000		435000	

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14781 SAS No.: SDG No:

Lab File ID (Standard): X3054 Date Analyzed: 06/03/91

Instrument ID: 4500-X Time Analyzed: 1515

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	115000	198000	155000
UPPER LIMIT	230000	396000	310000
LOWER LIMIT	58000	99000	76000
SAMPLE NO.			
14781-04	126000	206000	158000
14781-05	126000	194000	157000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14781 SAS No.: SDG No:

Lab File ID (Standard): X3074 Date Analyzed: 06/04/91

Instrument ID: 4500-X Time Analyzed: 1624

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	67800	117000	92200
UPPER LIMIT	136000	234000	184000
LOWER LIMIT	34000	585000	46000
SAMPLE NO.			
14781-02DL	116000	204000	147000
14781-03	962000	217000	116000
14781-09	118000	208000	147000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14781 SAS No.: SDG No:

Lab File ID (Standard): X3088 Date Analyzed: 06/05/91

Instrument ID: 4500-X Time Analyzed: 1534

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	67400	121000	97800
UPPER LIMIT	134000	242000	196000
LOWER LIMIT	34000	60000	49000
SAMPLE NO.			
14781-01DL	103000	240000	108000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

July 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (includes QC) received at Rocky Mountain Analytical Laboratory on June 28, 1991.

If you have any questions, the Program Administrator assigned to this project is Joel Holtz.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL# 15612

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1561201	DPV-W420TP-062791
1561202	DPV-W421TP-062791
1561202D	DPV-W421TPMSD-062791
1561202S	DPV-W421TPMS-062791
1561203	DPV-W421TPD-062791
1561204	DPV-W421TPFB-062791
1561205	DPV-W421TPFBD-062791
1561206	PCV-W23TP-062791
1561207	IGV-W10STP-062791
1561208	STP-W410TP-062791

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/l	1

Comments:

EIGHT WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 15612.

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Quan Kong

Date: 7/18/91

Project # 15612

The samples for this project were prepped for phenol on 7/05/91. On that date 100 mls of sample were prepped. For a reporting limit of 0.05 ppb we distill 200 mls of sample. Since the samples had limited volume 100 more mls were distilled on 7/12/91 and added to the distillate from the first date for a final volume of 200 mls.

Laboratory Supervisor Ann Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

000010

RMA SAMPLE NO
1561207

CLIENT ID NO
IGV-W10STP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids: 0.0

Date Received: 06/28/91

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

_____

_____

_____

RAP SECTION 6.1.4. MONITORING

3RD QUARTER - 1991

PAH MONITORING

Enseco
A Corning Company

CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016727

Introduction

Twelve aqueous samples were received at Enseco Rocky Mountain Analytical Laboratory on August 29, 1991. The samples were logged in under RMAL project number 016727. Sample STP-SLP3FBD-082891 (RMA # 016727-10) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 16727-03 and 04 were originally analyzed within the holding time at a dilution due to elevated target compounds. Several target compounds were saturated in this original analysis, therefore the samples were reanalyzed outside of the holding time at an additional dilution. Data for both sets of analyses are reported.

Samples 16727-11 and 12 were originally analyzed within the holding time at a dilution due to target compounds present in excess of calibration range. In the original analysis, results for sample 16727-12 showed 2,3-dihydroindene above linear range. Sample was further diluted and analyzed outside of the analysis holding time. Both sets of data are reported.

Surrogates could not be measured in samples 16727-03, 03DL, 04, 04DL, 11, 12 and 12DL due to the dilutions performed.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

Samples 16727-01, 02, 06 and 09 show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Samples 16727-09 and the associated method blank showed low or no recoveries on the D12-benzo(a)pyrene internal standard. Since this internal standard responded very poorly in the blank and not at all in sample -09 an alternate internal standard (D10-phenanthrene) was used to calculate the compounds normally associated with D12-benzo(a)pyrene.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in the method blank extracted 08-31 (BLK01) and in the method blank extracted 09-01 (D8-napthalene only) indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples with the exception of 16727-12DL show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio **Date:** 10/26/91
Debbie Fazio
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016727-0001-SA	STP-SLP3-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0002-SA	STP-SLP3D-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0003-SA	PCJW402082891	AQUEOUS	28 AUG 91	13:55	29 AUG 91
016727-0004-SA	PCJW403082891	AQUEOUS	28 AUG 91	13:25	29 AUG 91
016727-0005-SA	PCJW406082891	AQUEOUS	28 AUG 91	13:00	29 AUG 91
016727-0006-SA	PCJE2082891	AQUEOUS	28 AUG 91	08:15	29 AUG 91
016727-0007-SA	PCJE3082891	AQUEOUS	28 AUG 91	08:30	29 AUG 91
016727-0008-SA	PCJE13082891	AQUEOUS	28 AUG 91	08:55	29 AUG 91
016727-0009-SA	STP-SLP3FB-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0010-SA	STP-SLP3FBD-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0011-SA	IGV-W105-082891	AQUEOUS	28 AUG 91		29 AUG 91
016727-0012-SA	STP-W410-082891	AQUEOUS	28 AUG 91		29 AUG 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16727-11

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16727 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16727-11

Sample wt/vol: 4200 (g/ml) ML Lab File ID: C4797

Level: (low/med) LOW Date Received: 08/29/91

% Moisture: not dec. dec. Date Extracted: 09/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.19

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	48	U
496-11-7	2,3-Dihydroindene	300	B
95-13-6	1H-Indene	8.6	U
91-20-3	Naphthalene	100	B
4565-32-6	Benzo(B)Thiophene	68	
91-22-5	Quinoline	13	U
120-72-9	1H-Indole	24	U
91-57-6	2-Methylnaphthalene	8.6	U
90-12-0	1-Methylnaphthalene	210	
92-52-4	Biphenyl	34	J
208-96-8	Acenaphthylene	13	U
83-32-9	Acenaphthene	110	
132-64-9	Dibenzofuran	40	
86-73-7	Fluorene	48	
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	43	B
120-12-7	Anthracene	10	U
260-94-6	Acridine	27	U
86-74-8	Carbazole	21	*
206-44-0	Fluoranthene	24	
129-00-0	Pyrene	16	
56-55-3	Benzo(A)Anthracene	24	U
218-01-9	Chrysene	27	U
205-99-2	Benzo(B)Fluoranthene	24	U
207-08-9	Benzo(K)Fluoranthene	22	U
192-97-2	Benzo(E)Pyrene	18	U
50-32-8	Benzo(A)Pyrene	22	U
198-55-0	Perylene	24	U
193-39-5	Indeno(1,2,3-CD)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	15	U
191-24-2	Benzo(G,H,I)Perylene	27	U

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

October 16, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on September 19, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL #17193

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1719301	PCJ-W23TP-091891
1719302	IGV-W105TP-091891
1719303	STP-W410TP-091891
1719304	DPV-W422TP-091891
1719305	DPV-W421TP-091891
1719306	DPV-W420TP-091891
1719306MSD	DPV-W420TPMSD-091891
1719306MS	DPV-W420TPMS-091891
1719307	DPV-W420TPD-091891
1719308	DPV-W420TPFB-091891
1719309	DPV-W420TPFBD-091891

Parameters	Method No.	Detection Limits	Source
PHENOLICS	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC#17193

Sources:
1="Methods for Chemical Analysis of Water and Wastewater," USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 10/16/91

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

EPA SAMPLE NO.

1719302

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: IGV-W105TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

RAP SECTION 6.1.4. MONITORING

4TH QUARTER - 1991

PHENOLICS MONITORING

Enseco
A Corning Company

November 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on October 17, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Debbie Fazio

Debbie Fazio
Program Administrator

DF/cm
Enclosures

RMAL #17984

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U. S. EPA - CLP 000091

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

ab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.:_____ SAS No.:_____ SDG No.:_____

SOW No.: 7/88

EPA Sample No.	Lab Sample ID.
1798401	PCJ-W23TP-101691
1798402	DPV-W420TP-101691
1798403	DPV-W421TP-101691
1798404	IGV-W105TP-101691
1798405	STP-W410TP-101691
1798406	DPV-W422TP-101691
1798406MS	DPV-W422TPMS-101691
1798406MSD	DPV-W422TPMSD-101691
1798407	DPV-W422TPD-101691
1798408	DPV-W422TPFB-101691
1798409	DPV-W422TPFBD-101691

Parameters	Method No.	Detection Limits	Source
Phenolics	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 17984

Sources:
1="Methods for the Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 11/18/91

COOCC2-A

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

EPA SAMPLE NO.

000005 1798404

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: IGV-W105TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

PRAIRIE DU CHIEN-JORDAN AQUIFER
PAH QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
SLP4	NOT SAMPLED					
SLP4	NOT SAMPLED					
SLP4	NOT SAMPLED					
SLP4	NOT SAMPLED					
W23	03/28/91	14232-BLK01	DPV-W422D-032891	DPV-W422MS-032891	DPV-W422MSD-032891	DPV-W422FB-032891
W23	06/27/91	15605-BLK01	DPV-W421D-062791	DPV-W421MS-062791	DPV-W421MSD-062791	DPV-W421FB-062791
W23	09/18/91	17191-BLK01	DPV-W420D-091891	DPV-W420MS-091891	DPV-W420MSD-091891	DPV-W420FB-091891
W23	10/16/91	17977-BLK01	DPV-W422D-101691	DPV-W422MS-101691	DPV-W422MSD-101691	DPV-W422FB-101691
W48	NOT SAMPLED					
SLP6	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
SLP7	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
W48	NOT SAMPLED					
SLP6	06/25/91	15570-BLK01	PCJ-SLP6D-062591	PCJ-SLP6MS-062591	PCJ-SLP6MSD-062591	PCJ-SLP6FB-062591
SLP7	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	NOT SAMPLED

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W48	NOT SAMPLED					
SLP6	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
SLP7	08/27/91	16687-BLK01	PCJ-SLP7D-082791	PCJ-SLP7MS-082791	PCJ-SLP7MSD-082791	PCJ-SLP7FB-082791
W48	NOT SAMPLED					
SLP6	SAMPLE DESTROYED					
SLP7	SAMPLE DESTROYED					
W406	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W2	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
E13	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
H3	NOT ACCESSIBLE					
SLP10	05/01/91	14781-BLK01	IGV-W105D-050191	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	IGV-W105FB-050191
SLP14	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
SLP16	05/07/91	14812-BLK01	PCJ-SLP6D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
W402	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W403	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W119	NOT ACCESSIBLE					
W406	08/28/91	16727-BLK01	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891
E2	082891	16727-BLK01	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
E13	08/28/91	16727-BLK02	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891
H3	NOT ACCESSIBLE					
SLP10	08/29/91	16769-BLK01	PCJ-SLP10D-082991	PCJ-SLP10MS-082991	PCJ-SLP10MSD-082991	PCJ-SLP6FB-082991
SLP14	08/27/91	16687-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
SLP16	08/27/91	16887-BLK01	PCJ-SLP6D-082791	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	PCJ-SLP6FB-082791
SLP402	08/28/91	16727-BLK01	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891
W403	08/28/91	16727-BLK01	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP5MSD-082791	STP-SLP3FB-0082891
W119	NOT ACCESSIBLE					
SLP5	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
H6	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
E3	08/28/91	16727-BLK01	STP-SLP3D-082891	PCJ-SLP6MS-082791	PCJ-SLP6MSD-082791	STP-SLP3FB-082891
E15	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
MTK6	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W29	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W40	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W70	05/08/91	14886-BLK01	PCJ-SLP14D-050891	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP14FB-050891
W401	05/07/91	14812-BLK01	PCJ-SLP16D-050791	PCJ-SLP16MS-050791	PCJ-SLP16MSD-050791	PCJ-SLP16FB-050791
SLP8	03/27/91	14223-BLK01	PCJ-SLP6D-032791	PCJ-SLP6MS-032791	PCJ-SLP6MSD-032791	PCJ-SLP6FB-032791
SLP6	04/30/91	14773-BLK01	PCJ-SLP6D-043091	PCJ-SLP6MS-043091	PCJ-SLP6MSD-043091	PCJ-SLP6FB-043091
SLP6	07/18/91	15889-BLK01	PCJ-SLP6D-071891	PCJ-SLP6MS-071891	PCJ-SLP16MSD-071891	PCJ-SLP16FB-071891

PRAIRIE DU CHIEN-JORDAN AQUIFER
PHENOLICS QUALITY CONTROL SUMMARY

Well No.	Sample Date	Method Blank	Field Duplicate	Matrix Spike	Matrix Spike Dup	Field Blank
W23	03/28/91	14236-BLK	DPV-W422TPD-032891	DPV-W422TPMS-032891	DPV-W422TPMSD-032891	DPV-W422TPFB-032891
W23	06/27/91	15612-BLK	DPV-W421TPD-062791	DPV-W421TPMS-062791	DPV-W421TPMSD-062791	DPV-W421TPFB-062791
W23	09/18/91	17193-BLK	DPV-W420TPD-091891	DPV-W420TPMS-091891	DPV-W422TPMSD-091891	DPV-W420TPFB-091891
W23	10/16/91	17984-BLK	DPV-W420TPD-101691	DPV-W420TPMS-101691	DPV-W422TPMSD-101691	DPV-W420TPFB-101691

APPENDIX C

LABORATORY DATA SUMMARY PACKAGE: PRAIRIE DU CHIEN-JORDAN AQUIFER

RAP SECTION 7.3.(B) MONITORING

1ST HALF - 1991

PAH MONITORING

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 15, 1991

Enseco - RMAL Project Number 014232

Introduction

Nine aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on March 29, 1991. The samples were logged in under RMAL project number 014232. Sample DPV-W422FBD (RMA # 014232-07) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Due to concentrations of target compounds present in excess of calibration range, samples 014232-01 and 02 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 05-15-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz Date: 5-15-91
Joel Holtz
Program Administrator

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014232-0001-SA	DPV-W420-032891	AQUEOUS	28 MAR 91		29 MAR 91
014232-0002-SA	DPV-W421-032891	AQUEOUS	28 MAR 91		29 MAR 91
014232-0003-SA	~~DPV-W423~~-032891 PCJ-W23-	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-SA	DPV-W422	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-MS	DPV-W422MS	AQUEOUS	28 MAR 91		29 MAR 91
014232-0004-SD	DPV-W422MSD	AQUEOUS	28 MAR 91		29 MAR 91
014232-0005-SA	DPV-W422D	AQUEOUS	28 MAR 91		29 MAR 91
014232-0006-SA	DPV-W422FB	AQUEOUS	28 MAR 91		29 MAR 91
014232-0007-SA	DPV-W422FBD	AQUEOUS	28 MAR 91		29 MAR 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

1B

EPA SAMPLE NO.

14232-03

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14232 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14232-03

Sample wt/vol: 1000 (g/mL) ML Lab File ID: R5579

Level: (low/med) LOW Date Received: 03/29/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 05/03/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	10	U
496-11-7	2,3-Dihydroindene	9.3	J
95-13-6	1H-Indene	2.2	J
91-20-3	Naphthalene	20	
4565-32-6	Benzo(B)Thiophene	2.6	J
91-22-5	Quinoline	10	U
120-72-9	1H-Indole	10	U
91-57-6	2-Methylnaphthalene	3.9	J
90-12-0	1-Methylnaphthalene	6.0	J
92-52-4	Biphenyl	2.2	J
208-96-8	Acenaphthylene	1.7	J
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	3.7	J
86-73-7	Fluorene	8.4	J
132-65-0	Dibenzothiophene	10	U
85-01-8	Phenanthrene	8.2	J
120-12-7	Anthracene	10	U
260-94-6	Acridine	10	U
86-74-8	Carbazole	1.5	J
206-44-0	Fluoranthene	3.8	J
129-00-0	Pyrene	3.3	J
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
192-97-2	Benzo(E)Pyrene	10	U
50-32-8	Benzo(A)Pyrene	10	U
198-55-0	Perylene	10	U
193-39-5	Indeno(1,2,3-CD)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

July 26, 1991

Enseco - RMAL Project Number 015605

Introduction

Eight aqueous samples (including MS and MSD) were received at Enseco-Rocky Mountain Analytical Laboratory on June 28, 1991. The samples were logged in under RMAL project number 015605. Sample DPV-W421FBD-062791 (RMAL# 015605-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Samples 015605-01, 02, 03, 02MS, and 02MSD were diluted due to target compounds present in excess of calibration range. Surrogates could not be measured in these samples due to the dilutions performed.

This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 07-26-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz Date: 7-26-91
Joel E. Holtz
Program Administrator

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
015605-0001-SA	DPV-W420-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-SA	DPV-W421-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-MS	DPV-W421MS-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0002-SD	DPV-W421MSD-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0003-SA	DPV-W421D-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0004-FB	DPV-W421FB-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0005-FB	DPV-W421FBD-062791	AQUEOUS	27 JUN 91		28 JUN 91
015605-0006-SA	PCJ-W23-062791	AQUEOUS	27 JUN 91		28 JUN 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15605-06

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 15605 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15605-06

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R6399

Level: (low/med) LOW Date Received: 06/28/91

% Moisture: not dec. dec. Date Extracted: 06/29/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	7.3	J
95-13-6	1H-Indene	1.7	J
91-20-3	Naphthalene	21	
4565-32-6	Benzo(B)Thiophene	1.9	J
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	2.8	J
90-12-0	1-Methylnaphthalene	4.3	J
92-52-4	Biphenyl	1.5	J
208-96-8	Acenaphthylene	1.2	J
83-32-9	Acenaphthene	8.1	J
132-64-9	Dibenzofuran	3.1	J
86-73-7	Fluorene	6.5	J
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	6.9	J
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	2.9	J
129-00-0	Pyrene	2.6	J
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

April 24, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (including QC) received at Enseco-Rocky Mountain Analytical Laboratory on March 29, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Joel E. Holtz
Program Administrator

JH/dk

RMAL #14236

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE **0000001**

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1423601	DPV-W420TP-032891
1423602	DPV-W421TP-032891
1423603	DPV-W422TP-032891
1423603D	DPV-W422TPMSD-032891
1423603S	DPV-W422TPMS-032891
1423604	DPV-W422TPD-032891
1423605	DPV-W422TPFB-032891
1423606	DPV-W422TPFBD-032891
1423607	PCV-W23TP-032891
1423608	IGV-W10STP-032891

Parameters	Method No.	Detection Limits	Source
PPB PHENOLS	420.1	5 ug/L	1

Comments:
FIVE WATER SAMPLES FOR PPB PHENOLS ANALYSIS.
RMA QC#14236

Sources:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 4/19/91

Project# 14236

Samples 01 through 08 were analyzed on 4/01/91. We realize sample 06 is a duplicate of 05 and that this is a field blank. Sample 06 was slightly over the detection limit so we decided to reanalyze the sample on 4/18/91. The result for the latter date was reported. All raw data are included.

Laboratory Supervisor Annie Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"F"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

U.S. EPA - CLP

EPA SAMPLE NO.

1423607

1

INORGANIC ANALYSIS DATA SHEET

0000010

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: PCV-W23TP-032891

Level (low/med): LOW Date Received: 03/29/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

_____

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

July 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for ten aqueous samples (includes QC) received at Rocky Mountain Analytical Laboratory on June 28, 1991.

If you have any questions, the Program Administrator assigned to this project is Joel Holtz.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL# 15612

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

Lab Name: ROCKY MOUNTAIN ANALYTICAL Project No. _____

Sample Numbers

RMA SAMPLE NO	CLIENT SAMPLE ID
1561201	DPV-W420TP-062791
1561202	DPV-W421TP-062791
1561202D	DPV-W421TPMSD-062791
1561202S	DPV-W421TPMS-062791
1561203	DPV-W421TPD-062791
1561204	DPV-W421TPFB-062791
1561205	DPV-W421TPFBD-062791
1561206	PCV-W23TP-062791
1561207	IGV-W10STP-062791
1561208	STP-W410TP-062791

PARAMETERS	METHOD NO.	DETECTION LIMIT	SOURCE
Phenol	420.1	5 ug/l	1

Comments:

EIGHT WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 15612.

SOURCE:
1="Methods for Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Conni Long

Date: 7/19/91

Project # 15612

The samples for this project were prepped for phenol on 7/05/91. On that date 100 mls of sample were prepped. For a reporting limit of 0.05 ppb we distill 200 mls of sample. Since the samples had limited volume 100 more mls were distilled on 7/12/91 and added to the distillate from the first date for a final volume of 200 mls.

Laboratory Supervisor Anne Lang

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

000009

RMA SAMPLE NO
1561206

CLIENT ID NO
PCV-W23TP-
062791

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL

Project No: _____

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids: 0.0

Date Received: 06/28/91

Analyte	Concentration	C	Q	Concentration Units
Phenol	5	U		ug/L

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

COMMENTS:

_____

_____

_____

RAP SECTION 7.3.(B) MONITORING

2ND HALF - 1991

PAH MONITORING

Enseco
A Corning Company

CASE NARRATIVE

FOR

City of St. Louis Park

November 01, 1991

Enseco - RMAL Project Number 017191

Introduction

Ten aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on September 19, 1991. The samples were logged in under RMAL project number 017191. Sample DPV-W420FBD-091891 (RMAL #. 17191-05) was extracted and inadvertently analyzed. This data is reported, however there will be no charge for the analysis as this sample was to be extracted and held per the 1990 QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Samples 17191-01, 02, 03, 06, 02MS and 02MSD were analyzed at dilutions due to target compounds present in excess of calibration range. With the exception of sample -01, surrogates could not be measured in the above samples due to the dilutions performed.

Matrix spike/spike duplicate recoveries could not be calculated for -02MS and 02MSD due to the level of spike compounds present in the associated sample. Several spike compounds were diluted out as well. All recoveries and RPD's are reprted as "NC" (not calculated).

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 11/01/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio Date: 11/01/91
Debbie Fazio
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
017191-0001-SA	DPV-W421-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-SA	DPV-W420-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-MS	DPV-W420MS-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0002-SD	DPV-W420MSD-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0003-SA	DPV-W420D-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0004-SA	DPV-W420FB-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0005-SA	DPV-W420FBD-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0006-SA	WTF-ACLE-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0007-SA	WTF-ACLI-091891	AQUEOUS	18 SEP 91		19 SEP 91
017191-0008-SA	PCJ-W23-091891	AQUEOUS	18 SEP 91		19 SEP 91

Enseco

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

17191-08

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17191 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17191-08

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7301

Level: (low/med) LOW Date Received: 09/19/91

% Moisture: not dec. dec. Date Extracted: 09/21/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/14/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	8.3	J
95-13-6	1H-Indene	2.2	J
91-20-3	Naphthalene	27	
4565-32-6	Benzo(B)Thiophene	2.3	J
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	4.7	J
90-12-0	1-Methylnaphthalene	6.4	J
92-52-4	Biphenyl	2.0	J
208-96-8	Acenaphthylene	1.6	J
83-32-9	Acenaphthene	10	
132-64-9	Dibenzofuran	3.8	J
86-73-7	Fluorene	7.9	J
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	7.6	J
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	1.3	J
206-44-0	Fluoranthene	3.3	J
129-00-0	Pyrene	2.8	J
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

December 10, 1991

Enseco - RMAL Project Number 017977

Introduction

Nine aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on October 18, 1991. The samples were logged in under RMAL project number 017977. Sample DPV-W422FBD (RMA # 017977-07) was extracted and inadvertently analyzed and reported. You will not be charged for the analysis. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-billion (ppb) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPB PAH

Due to concentrations of target compounds present in excess of calibration range, samples 017977-02 and 03 were analyzed and reported at dilutions. Surrogates could not be measured due to the dilutions performed.

In the original analysis of sample 017977-03 Naphthalene was saturated. Hence, a reanalysis at an additional dilution was performed for this component. Both sets of data is included in the data package.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
017977-0001-SA	PCJ-W23-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0002-SA	DPV-W420-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0003-SA	DPV-W421-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-SA	DPV-W422-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-MS	DPV-W422MS-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0004-SD	DPV-W422MSD-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0005-SA	DPV-W422D-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0006-SA	DPV-W422FB-101691	AQUEOUS	16 OCT 91		17 OCT 91
017977-0007-SA	DPV-W422FBD-101691	AQUEOUS	16 OCT 91		17 OCT 91

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 12/10/91
Tracy Conroy
Data Control Supervisor

Approved by: Julie Kramer Date: Dec 10, 1991
Julie Kramer
Program Administrator

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax 303/431-7171

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

17977-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 17977 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 17977-01

Sample wt/vol: 1060 (g/mL) ML Lab File ID: R7904

Level: (low/med) LOW Date Received: 10/18/91

% Moisture: not dec. dec. Date Extracted: 10/20/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 11/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: .943

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
271-89-6	2,3-Benzofuran	9.4	U
496-11-7	2,3-Dihydroindene	7.5	J
95-13-6	1H-Indene	1.9	J
91-20-3	Naphthalene	25	
4565-32-6	Benzo(B)Thiophene	1.9	J
91-22-5	Quinoline	9.4	U
120-72-9	1H-Indole	9.4	U
91-57-6	2-Methylnaphthalene	4.0	J
90-12-0	1-Methylnaphthalene	5.8	J
92-52-4	Biphenyl	1.7	J
208-96-8	Acenaphthylene	1.3	J
83-32-9	Acenaphthene	9.6	
132-64-9	Dibenzofuran	3.4	J
86-73-7	Fluorene	7.1	J
132-65-0	Dibenzothiophene	9.4	U
85-01-8	Phenanthrene	7.5	J
120-12-7	Anthracene	9.4	U
260-94-6	Acridine	9.4	U
86-74-8	Carbazole	9.4	U
206-44-0	Fluoranthene	3.2	J
129-00-0	Pyrene	2.7	J
56-55-3	Benzo(A)Anthracene	9.4	U
218-01-9	Chrysene	9.4	U
205-99-2	Benzo(B)Fluoranthene	9.4	U
207-08-9	Benzo(K)Fluoranthene	9.4	U
192-97-2	Benzo(E)Pyrene	9.4	U
50-32-8	Benzo(A)Pyrene	9.4	U
198-55-0	Perylene	9.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	9.4	U
53-70-3	Dibenz(A,H)Anthracene	9.4	U
191-24-2	Benzo(G,H,I)Perylene	9.4	U

PHENOLICS MONITORING

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

October 16, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on September 19, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Joel Holtz
Program Administrator

JH/cm
Enclosures

RMAL #17193

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

U.S.EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE 0000001

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

SOW No: 7/88

EPA Sample No.	Lab Sample ID.
1719301	PCJ-W23TP-091891
1719302	IGV-W105TP-091891
1719303	STP-W410TP-091891
1719304	DPV-W422TP-091891
1719305	DPV-W421TP-091891
1719306	DPV-W420TP-091891
1719306MSD	DPV-W420TPMSD-091891
1719306MS	DPV-W420TPMS-091891
1719307	DPV-W420TPD-091891
1719308	DPV-W420TPFB-091891
1719309	DPV-W420TPFBD-091891

Parameters	Method No.	Detection Limits	Source
PHENOLICS	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC#17193

Sources:
1="Methods for Chemical Analysis of Water and Wastewater," USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Lang

Date: 10/16/91

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P" for ICP
"A" for Flame AA
"F" for Furnace AA
"CV" for Manual Cold Vapor AA
"AV" for Automated Cold Vapor AA
"AS" for Semi-Automated Spectrophotometric
"C" for Manual Spectrophotometric
"T" for Titrimetric
"NR" if the analyte is not required to be analyzed

EPA SAMPLE NO.
1719301

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: PCJ-W23TP-091891

Level (low/med): LOW Date Received: 09/19/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
PHENOLICS	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

Enseco
A Corning Company

November 18, 1991

Mr. James Grube
City of St. Louis Park
5005 Minnetonka Blvd.
St. Louis Park, MN 55416

Dear Mr. Grube:

Enclosed is the report for eleven aqueous samples (includes QC) received at Enseco-Rocky Mountain Analytical Laboratory on October 17, 1991.

If you have any questions, please do not hesitate to call.

Sincerely,

Debbie Fazio

Debbie Fazio
Program Administrator

DF/cm
Enclosures

RMAL #17984

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.:_____ SAS No.:_____ SDG No.:_____

SOW No.: 7/88

EPA Sample No.	Lab Sample ID.
1798401	PCJ-W23TP-101691
1798402	DPV-W420TP-101691
1798403	DPV-W421TP-101691
1798404	IGV-W105TP-101691
1798405	STP-W410TP-101691
1798406	DPV-W422TP-101691
1798406MS	DPV-W422TPMS-101691
1798406MSD	DPV-W422TPMSD-101691
1798407	DPV-W422TPD-101691
1798408	DPV-W422TPFB-101691
1798409	DPV-W422TPFBD-101691

Parameters	Method No.	Detection Limits	Source
Phenolics	420.1	5 ug/L	1

Comments:
NINE WATER SAMPLES FOR PPB PHENOLICS ANALYSIS.
RMA QC# 17984

Sources:
1="Methods for the Chemical Analysis of Water and Wastes", USEPA-EMSL, Cincinnati.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: Anne Long

Date: 11/18/91

COOCC2-A

RESULT QUALIFIERS

C - Concentration Qualifier:

Enter a "B" if the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Limit (IDL). If the analyte was analyzed for but not detected, a "U" must be entered.

Q - Quality Control Qualifiers:

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover Page (if the problem applies to all samples) or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions (MSA).

W - Post-digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive. No combination of these qualifiers can appear in the same field for an analyte.

M - Method Qualifier:

"P"	for ICP
"A"	for Flame AA
"f"	for Furnace AA
"CV"	for Manual Cold Vapor AA
"AV"	for Automated Cold Vapor AA
"AS"	for Semi-Automated Spectrophotometric
"C"	for Manual Spectrophotometric
"T"	for Titrimetric
"NR"	if the analyte is not required to be analyzed

EPA SAMPLE NO.

000402 1788401

INORGANIC ANALYSIS DATA SHEET

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: _____

Lab Code: ENSECO Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix (soil/water): WATER Lab Sample ID: PCJ-W23TP-101691

Level (low/med): LOW Date Received: 10/17/91

% Solids: 0.0

Concentration Units: ug/L

Analyte	Concentration	C	Q
Phenolics	5	U	

Color Before: COLORLESS Clarity Before: CLEAR Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

_____

_____

_____

_____

_____

RAP SECTION 7.3.(C) MONITORING

1ST QUARTER - 1991

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

FOR

City of St. Louis Park

May 2, 1991

Enseco - RMAL Project Number 014223

Introduction

Thirteen aqueous samples (including MS and MSD) were received at Enseco - Rocky Mountain Analytical Laboratory on March 28, 1991. The samples were logged in under RMAL project number 014223. Sample PCJ-SLP6FBD-032791 (RMAL # 014223-05) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low and medium level part-per-trillion (PPT) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All the samples and the associated method blank BLK01 show target compounds that do not meet secondary ion confirmation criteria. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 05-02-91
Tracy Conroy
Data Control Supervisor

Approved by: for **Date:** 2 MAY 1991
Joel Holtz
Program Administrator

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014223-0001-SA	PCJ-SLP7-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0002-SA	PCJ-SLP8-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0003-SA	MSH-SLP13-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0004-FB	PCJ-SLP6FB-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0005-FD	PCJ-SLP6FBD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SA	PCJ-SLP6-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-MS	PCJ-SLP6MS-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0006-SD	PCJ-SLP6MSD-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0007-SA	PCJ-SLP6D-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0008-SA	IGV-WI05-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0009-SA	MSH-SLP11-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0010-SA	MSH-SLP17-032791	AQUEOUS	27 MAR 91		28 MAR 91
014223-0011-SA	MSH-SLP12-032791	AQUEOUS	27 MAR 91		28 MAR 91

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 014223

PPT PAH

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK
PROJECT:
SAMPLING COMPANY: SAME
SAMPLING SITE: SAME
TEAM LEADER: MZR

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZR
SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZR
INITIAL CONTENTS TEMP: °C
SEAL NUMBER:
SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

	DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
01	3-27-91		PCU-SLP7-032791	IXLAMBER	6	PPL PAH	LOW LEVEL PPL
02	3-27-91		PCU-SLP8-032791	IXLAMBER	6	PPL PAH	LOW LEVEL PPL
03	3-27-91		MSH-SLP13-032791	IXLAMBER	6	PPL PAH	LOW LEVEL PPL

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 286507625 5
RECEIVED FOR LAB: R.M.A.C.
SIGNED: Justin Clapp
DATE/TIME: 3/28/91 0800
ENSECO PROJECT NUMBER: 14223

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK
PROJECT:
SAMPLING COMPANY: SAME
SAMPLING SITE: SAME
TEAM LEADER: MZR

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZR
SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZR
INITIAL CONTENTS TEMP: °C
SEAL NUMBER:
SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
043-27-91		RCU-SLP6FB-032791	IXL AMBER	6		LOW LEVEL PPT
053-27-91		PCU-SLP6FBD-032791	IXL AMBER	6		LOW LEVEL PPT
				6		EMPTY

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2865076255
RECEIVED FOR LAB: R.M.A.L.
SIGNED: Justin Champagne
DATE/TIME: 3/28/91
ENSECO PROJECT NUMBER: 14223

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK
PROJECT:
SAMPLING COMPANY: SAME
SAMPLING SITE: SAME
TEAM LEADER: MZ

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZ
SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZ
INITIAL CONTENTS TEMP: °C
SEAL NUMBER:
SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
06 3-27-91		PEU-SLPG. -032791	IXLAMBER	6	PPT PAH	LOW LEVEL PPT
07 3-27-91		PEU-SLPGD -032781	IXLAMBER	6	PPT PAH	LOW LEVEL PPT
				6		EMPTY

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZ
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 280650762555
RECEIVED FOR LAB: R.M.A.L
SIGNED: Justin Chappell
DATE/TIME: 3/28/91 0800
ENSECO PROJECT NUMBER: 14223

EN8—1133

White - CLIENT Pink - LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK		SAMPLE SAFE™ CONDITIONS	
PROJECT		PACKED BY: MZR	SEAL NUMBER
SAMPLING COMPANY: SAME		SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	CONDITION OF CONTENTS
SAMPLING SITE: SAME		SEALED FOR SHIPPING BY: MZR	INITIAL CONTENTS TEMP °C
TEAM LEADER: MZR		SEAL NUMBER	SAMPLING STATUS ☐ Done ☐ Continuing Until
		SEAL INTACT UPON RECEIPT BY LAB ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
06 MS 3-27-91		PCU-SLPGMS-032791	1XLAMBER	6	PPT PAH	LOW LEVEL PPT
06 SD 11 3-27-91		PCU-SLPGMSD-03-27-91	1XLAMBER	6	PPT PAH	LOW LEVEL PPT
#3 3-27-91		MSH-SLP12-032791	1XLAMBER	6	PPT. PAH	LOW LEVEL PPT

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZR

METHOD OF SHIPMENT: FED EXP. AIRBILL NUMBER: 2865076255

RECEIVED FOR LAB: R.M.A.L. SIGNED: Justin Chappell DATE/TIME: 3/28/91 8:00AM

ENSECO PROJECT NUMBER: 14223

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK	SAMPLE SAFE™ CONDITIONS: PACKED BY: MJH		SEAL NUMBER:
PROJECT	SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY		CONDITION OF CONTENTS
SAMPLING COMPANY: SAME	SEALED FOR SHIPPING BY: MJH		INITIAL CONTENTS TEMP °C
SAMPLING SITE: SAME	SEAL NUMBER	SAMPLING STATUS: ☐ Done ☐ Continuing Until	
TEAM LEADER: MJH	SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C	

	DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
08	3-27-91		IRV-WIOS-032791	IXL AMBER	6	PPT	MED LEVEL PPT
09	3-27-91		MSH-SLP11-032791	IXL AMBER	6	PPT	LOW LEVEL PPT
10	3-27-91		MSH-SLP17-032791	IXL AMBER	6	PPT	LOW LEVEL PPT

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MJH
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2865076255
RECEIVED FOR LAB: R.M.A.L.
SIGNED: Justin Chappell
DATE/TIME: 3/26/91 0830
ENSECO PROJECT NUMBER: 14223

ENS—1133

White - CLIENT Pink - LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

RMAL # 14223

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-01

Sample wt/vol: 3980 (g/ml) ML Lab File ID: X2968

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.126

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	12	
95-13-6	1H-Indene	1.3	
91-20-3	Naphthalene	4.8	JB*
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.2	B
90-12-0	1-Methylnaphthalene	1.7	B*
92-52-4	Biphenyl	1.1	J *
208-96-8	Acenaphthylene	6.0	
83-32-9	Acenaphthene	12	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.5	
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.4	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.1	J
129-00-0	Pyrene	4.0	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-04

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-04

Sample wt/vol: 4210 (g/ml) ML Lab File ID: X2971

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	1.4	
95-13-6	1H-Indene	1.0	*
91-20-3	Naphthalene	5.2	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.5	B*
90-12-0	1-Methylnaphthalene	1.2	JB
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.7	
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.2	J *
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-06

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-06

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X2979

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	17	
95-13-6	1H-Indene	2.8	
91-20-3	Naphthalene	3.3	JB
4565-32-6	Benzo(B)Thiophene	1.4	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	2.4	B
90-12-0	1-Methylnaphthalene	1.2	J *
92-52-4	Biphenyl	1.2	J
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	5.1	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.2	JB
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.3	JB
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

EPA SAMPLE NO.

14223-07

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-07

Sample wt/vol: 4220 (g/ml) ML Lab File ID: X2985

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	32	
95-13-6	1H-Indene	5.1	
91-20-3	Naphthalene	7.5	B
4565-32-6	Benzo(B)Thiophene	2.6	*
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	7.1	B
90-12-0	1-Methylnaphthalene	3.0	B
92-52-4	Biphenyl	2.1	J
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.9	U
86-73-7	Fluorene	0.9	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.7	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.7	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.2	J
129-00-0	Pyrene	1.1	J
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	4.5	U
205-99-2	Benzo(B)Fluoranthene	2.0	U
207-08-9	Benzo(K)Fluoranthene	2.4	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-06MS

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-06MS

Sample wt/vol: 4050 (g/ml) ML Lab File ID: X2980

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/11/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	30	
95-13-6	1H-Indene	13	SP
91-20-3	Naphthalene	11	B*SP
4565-32-6	Benzo(B)Thiophene	2.5	
91-22-5	Quinoline	10	SP
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	12	B SP
90-12-0	1-Methylnaphthalene	1.7	*
92-52-4	Biphenyl	1.9	J
208-96-8	Acenaphthylene	1.6	*
83-32-9	Acenaphthene	10	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	10	SP
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.8	B*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	2.2	B
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	4.2	SP
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	2.3	SP
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14223-06MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14223-06MSD

Sample wt/vol: 4200 (g/ml) ML Lab File ID: X2986

Level: (low/med) LOW Date Received: 03/28/91

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/12/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.119

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	28	
95-13-6	1H-Indene	11	SP
91-20-3	Naphthalene	9.7	B SP
4565-32-6	Benzo(B)Thiophene	2.3	*
91-22-5	Quinoline	9.4	SP
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	11	B SP
90-12-0	1-Methylnaphthalene	1.6	*
92-52-4	Biphenyl	1.7	J
208-96-8	Acenaphthylene	1.4	
83-32-9	Acenaphthene	9.3	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	9.0	SP
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.3	B*
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.2	J
129-00-0	Pyrene	1.8	B
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	3.1	SP
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.4	J SP
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	14223-01	96	120	40
2	14223-02	95	120	42
3	14223-03	98	125	47
4	14223-04	104	129	69
5	14223-06	50	55	20
6	14223-07	96	101	46
7	14223-09	54	60	23
8	14223-10	102	127	47
9	14223-11	84	101	41
10	14223-06MS	88	112	53
11	14223-06MSD	83	98	39
12	BLK01	91	112	71
13	BLK02	81	98	66

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Level: MED

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	14223-08	95	106	76
2	BLK03	105	124	88

	QC.LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 14223-06 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	9.84	3.77	12.5	99
Naphthalene	9.84	0	10.8	110
Quinoline	9.84	0	10.0	102
2-Methylnaphthalene	9.84	2.25	12.4	103
Fluorene	9.84	0	10.3	105
Chrysene	9.84	0	4.17	42
Benzo(E)Pyrene	9.84	0	2.33	24

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	9.52	11.3	90	10
Naphthalene	9.52	9.71	102	8
Quinoline	9.52	9.41	99	3
2-Methylnaphthalene	9.52	10.7	89	15
Fluorene	9.52	9.02	95	13
Chrysene	9.52	3.08	32	27
Benzo(E)Pyrene	9.52	1.42	15	46

Comments:

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Lab File ID: X2965 Lab Sample ID: BLK01

Date Extracted: 03/31/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 04/10/91 Time Analyzed: 1431

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.,	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14223-01	14223-01	X2968	04/10/91
2	14223-02	14223-02	X2969	04/10/91
3	14223-03	14223-03	X2970	04/10/91
4	14223-04	14223-04	X2971	04/10/91
5	14223-07	14223-07	X2985	04/10/91
6	14223-09	14223-09	X2974	04/10/91
7	14223-10	14223-10	X2975	04/10/91
8	14223-11	14223-11	X2976	04/10/91

COMMENTS:

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X2965

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 03/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	3.9	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	3.1	
90-12-0	1-Methylnaphthalene	1.5	J
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.3	U
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Lab File ID: X2966 Lab Sample ID: BLK02

Date Extracted: 04/01/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 04/10/91 Time Analyzed: 1516

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: 4500-X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14223-06	14223-06	X2979	04/11/91
2	14223-06MS	14223-06MS	X2980	04/11/91
3	14223-06MSD	14223-06MSD	X2986	04/12/91

COMMENTS:

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X2966

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.1	U	
496-11-7	2,3-Dihydroindene	1.4	U	
95-13-6	1H-Indene	0.9	U	
91-20-3	Naphthalene	2.5	J	*
4565-32-6	Benzo(B)Thiophene	0.9	U	
91-22-5	Quinoline	1.4	U	
120-72-9	1H-Indole	2.5	U	
91-57-6	2-Methylnaphthalene	2.5		*
90-12-0	1-Methylnaphthalene	1.6	U	
92-52-4	Biphenyl	4.3	U	
208-96-8	Acenaphthylene	1.4	U	
83-32-9	Acenaphthene	1.3	U	
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	1.0	U	
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	1.2	J	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.9	U	
86-74-8	Carbazole	1.9	U	
206-44-0	Fluoranthene	1.4	U	
129-00-0	Pyrene	1.4	U	
56-55-3	Benzo(A)Anthracene	2.5	U	
218-01-9	Chrysene	2.8	U	
205-99-2	Benzo(B)Fluoranthene	2.5	U	
207-08-9	Benzo(K)Fluoranthene	2.3	U	
192-97-2	Benzo(E)Pyrene	1.9	U	
50-32-8	Benzo(A)Pyrene	2.3	U	
198-55-0	Perylene	2.5	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.8	U	

4B

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Lab File ID: X29467 Lab Sample ID: BLK03

Date Extracted: 04/01/91 Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 04/10/91 Time Analyzed: 1601

Matrix: (soil/water) WATER Level: (low/med) MED

Instrument ID: 4500-X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	14223-08	14223-08	X2982	04/11/91

COMMENTS:

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14223 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK03

Sample wt/vol: 500 (g/ml) ML Lab File ID: X2967

Level: (low/med) MED Date Received:

% Moisture: not dec. dec. Date Extracted: 04/01/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 04/10/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 10.0

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	410	U
496-11-7	2,3-Dihydroindene	110	U
95-13-6	1H-Indene	72	U
91-20-3	Naphthalene	520	U
4565-32-6	Benzo(B)Thiophene	72	U
91-22-5	Quinoline	110	U
120-72-9	1H-Indole	200	U
91-57-6	2-Methylnaphthalene	72	U
90-12-0	1-Methylnaphthalene	130	U
92-52-4	Biphenyl	340	U
208-96-8	Acenaphthylene	110	U
83-32-9	Acenaphthene	100	U
132-64-9	Dibenzofuran	80	U
86-73-7	Fluorene	80	U
132-65-0	Dibenzothiophene	88	U
85-01-8	Phenanthrene	100	U
120-12-7	Anthracene	88	U
260-94-6	Acridine	230	U
86-74-8	Carbazole	150	U
206-44-0	Fluoranthene	110	U
129-00-0	Pyrene	110	U
56-55-3	Benzo(A)Anthracene	200	U
218-01-9	Chrysene	220	U
205-99-2	Benzo(B)Fluoranthene	200	U
207-08-9	Benzo(K)Fluoranthene	180	U
192-97-2	Benzo(E)Pyrene	150	U
50-32-8	Benzo(A)Pyrene	180	U
198-55-0	Perylene	200	U
193-39-5	Indeno(1,2,3-CD)Pyrene	170	U
53-70-3	Dibenz(A,H)Anthracene	130	U
191-24-2	Benzo(G,H,I)Perylene	220	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14223 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X2940	03/25/91	1439
20 PPB_PAH_STD	X2941	03/25/91	2100
4800 PPB_PAH_STD	X2944	03/25/91	2314
1200 PPB_PAH_STD	X2943	03/25/91	2229
240 PPB_PAH_STD	X2942	03/25/91	2145

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14223 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X2964	04/10/91	1241
BLK01	X2865	04/10/91	1431
BLK02	X2966	04/10/91	1516
BLK03	X2967	04/10/91	1601
14223-01	X2968	04/10/91	1645
14223-02	X2969	04/10/91	1730
14223-03	X2970	04/10/91	1815
14223-04	X2971	04/10/91	1900
14223-09	X2974	04/10/91	2115
14223-10	X2975	04/10/91	2159
14223-11	X2976	04/10/91	2244

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14223 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X2978	04/11/91	1241
14223-06	X2879	04/11/91	1812
14223-06MS	X2980	04/11/91	1857
14223-08	X2982	04/11/91	2026

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: RMAL Contract No:

Lab Code: ENSECO Case No: 14223 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X2984	04/12/91	1304
14223-07	X2985	04/12/91	1502
14223-06MSD	X2986	04/12/91	1547

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14223

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 20= X2941 RRF 40= X2940
RRF 240= X2942 RRF 1200= X2943 RRF 4800= X2944

COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14223

Instrument ID: 4500-X Calibration Date(s): 04/10/91 Time: 1241

Lab ID: X2964 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	0.954	-3.7
2,3-Dihydroindene	0.775	0.825	-6.5
1H-Indene	0.776	0.756	2.6
Naphthalene	1.740	1.729	0.6
Benzo(B)Thiophene	1.300	1.265	2.7
Quinoline	0.827	0.635	23.2
1H-Indole	0.928	0.747	19.5
2-Methylnaphthalene	0.756	0.722	4.5
1-Methylnaphthalene	0.810	0.810	0.0
Biphenyl	1.183	1.221	-3.2
Acenaphthylene	1.534	1.298	15.4
Acenaphthene	1.057	1.021	3.4
Dibenzofuran	1.376	1.272	7.6
Fluorene	1.150	1.065	7.4
Dibenzothiophene	0.825	0.807	2.2
Phenanthrene	0.886	0.908	-2.5
Anthracene	0.833	0.722	13.3
Acridine	0.534	0.368	31.1
Carbazole	0.701	0.626	10.7
Fluoranthene	1.006	0.944	6.2
Pyrene	1.123	1.124	-0.1
Benzo(A)Anthracene	1.155	1.102	4.6
Chrysene	1.307	1.737	-32.3
Benzo(B)Fluoranthene	1.047	1.372	-31.0
Benzo(K)Fluoranthene	1.423	1.430	-0.5
Benzo(E)Pyrene	1.063	1.391	-30.9
Benzo(A)Pyrene	1.020	1.085	-6.4
Perylene	0.715	0.791	-10.6
Indeno(1,2,3-CD)Pyrene	1.196	0.979	18.1
Dibenz(A,H)Anthracene	1.039	0.957	7.9
Benzo(G,H,I)Perylene	1.073	1.108	-3.3
D8-Naphthalene	1.578	1.594	-1.0
D10-Flourene	0.936	0.849	9.3
D12-Chrysene	1.143	1.371	-19.9

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14223

Instrument ID: 4500-X Calibration Date(s): 04/11/91 Time: 1505

Lab ID: X2978 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.145	-24.5
2,3-Dihydroindene	0.775	0.779	-0.5
1H-Indene	0.776	0.756	2.6
Naphthalene	1.740	1.733	0.4
Benzo(B)Thiophene	1.300	1.252	3.7
Quinoline	0.827	0.749	9.4
1H-Indole	0.928	0.862	7.1
2-Methylnaphthalene	0.756	0.698	7.7
1-Methylnaphthalene	0.810	0.821	-1.4
Biphenyl	1.183	1.178	0.4
Acenaphthylene	1.534	1.538	-0.3
Acenaphthene	1.057	1.075	-1.7
Dibenzofuran	1.376	1.380	-0.3
Fluorene	1.150	1.129	1.8
Dibenzothiophene	0.825	0.842	-2.1
Phenanthrene	0.886	0.913	-3.0
Anthracene	0.833	0.871	-4.6
Acridine	0.534	0.409	23.4
Carbazole	0.701	0.719	-2.6
Fluoranthene	1.006	1.043	-3.7
Pyrene	1.123	1.148	-2.2
Benzo(A)Anthracene	1.155	1.041	9.9
Chrysene	1.307	1.208	7.6
Benzo(B)Fluoranthene	1.047	1.987	5.7
Benzo(K)Fluoranthene	1.423	1.251	12.1
Benzo(E)Pyrene	1.063	1.003	5.6
Benzo(A)Pyrene	1.020	1.989	3.0
Perylene	0.715	0.771	-7.8
Indeno(1,2,3-CD)Pyrene	1.196	1.085	9.3
Dibenz(A,H)Anthracene	1.039	1.000	3.8
Benzo(G,H,I)Perylene	1.073	1.997	7.1
D8-Naphthalene	1.578	1.603	-1.6
D10-Flourene	0.936	0.936	0.0
D12-Chrysene	1.143	1.011	11.5

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: RMAL Lab Code: ENSECO Case No: 14223

Instrument ID: 4500-X Calibration Date(s): 04/12/91 Time: 1304

Lab ID: X2984 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.032	-12.2
2,3-Dihydroindene	0.775	0.762	1.7
1H-Indene	0.776	0.751	3.2
Naphthalene	1.740	1.799	-3.4
Benzo(B)Thiophene	1.300	1.290	0.8
Quinoline	0.827	0.743	10.2
1H-Indole	0.928	0.854	8.0
2-Methylnaphthalene	0.756	0.733	3.0
1-Methylnaphthalene	0.810	0.803	0.9
Biphenyl	1.183	1.211	-2.4
Acenaphthylene	1.534	1.661	-8.3
Acenaphthene	1.057	1.011	4.4
Dibenzofuran	1.376	1.413	-2.7
Fluorene	1.150	1.158	-0.7
Dibenzothiophene	0.825	0.820	0.6
Phenanthrene	0.886	0.905	-2.1
Anthracene	0.833	0.817	1.9
Acridine	0.534	0.419	21.5
Carbazole	0.701	0.628	10.4
Fluoranthene	1.006	1.011	-0.5
Pyrene	1.123	1.164	-3.7
Benzo(A)Anthracene	1.155	1.008	12.7
Chrysene	1.307	1.170	10.5
Benzo(B)Fluoranthene	1.047	1.978	6.6
Benzo(K)Fluoranthene	1.423	1.150	19.2
Benzo(E)Pyrene	1.063	0.986	7.2
Benzo(A)Pyrene	1.020	1.991	2.8
Perylene	0.715	0.758	-6.0
Indeno(1,2,3-CD)Pyrene	1.196	1.112	7.0
Dibenz(A,H)Anthracene	1.039	0.988	4.9
Benzo(G,H,I)Perylene	1.073	1.075	-0.2
D8-Naphthalene	1.578	1.606	-1.8
D10-Flourene	0.936	0.915	2.2
D12-Chrysene	1.143	0.991	13.3

FORM VII

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14223 SAS No.: SDG No:

Lab File ID (Standard): X2964 Date Analyzed: 04/10/91

Instrument ID: 4500-X Time Analyzed: 1241

	IS#1 (ACN) AREA	#	IS#2 (PHN) AREA	#	IS#3 (BAP) AREA	#
12 HOUR STD	108000		182000		89200	
UPPER LIMIT	216000		364000		178000	
LOWER LIMIT	54000		91000		44600	
SAMPLE NO.						
14223-01	117000		200000		158000	
14223-02	108000		183000		141000	
14223-03	100000		182000		138000	
14223-04	86200		150000		123000	
14223-09	88400		152000		123000	
14223-10	75400		135000		111000	
14223-11	78700		144000		115000	
BLK01	99900		182000		115000	
BLK02	134000		240000		159000	
BLK03	126000		216000		133000	

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14223 SAS No.: SDG No:

Lab File ID (Standard): X2978 Date Analyzed: 04/11/91

Instrument ID: 4500-X Time Analyzed: 1505

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	123000	215000	152000
UPPER LIMIT	246000	430000	304000
LOWER LIMIT	61500	108000	76000
SAMPLE NO.			
14223-06	129000	237000	180000
14223-06MS	126000	230000	184000
14223-08	112000	213000	174000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: RMAL Contract:

Lab Code: ENSECO Case No: 14223 SAS No.: SDG No:

Lab File ID (Standard): X2984 Date Analyzed: 04/12/91

Instrument ID: 4500-X Time Analyzed: 1304

	IS#1 (ACN) AREA	#	IS#2 (PHN) AREA	#	IS#3 (BAP) AREA	#
12 HOUR STD	98900		182000		130000	
UPPER LIMIT	198000		364000		260000	
LOWER LIMIT	49400		91000		65000	
SAMPLE NO.						
14223-06SD	114000		211000		174000	
14223-07	112000		213000		174000	

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

1/87 Rev.

FORM VIII SV-2

RAP SECTION 7.3(C) MONITORING

2ND QUARTER - 1991

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

July 15, 1991

Enseco - RMAL Project Number 015570

Introduction

Six aqueous samples (including MS and MSD) were received at Enseco-Rocky Mountain Analytical Laboratory on June 26, 1991. The samples were logged in under RMAL project number 015570. Sample SLP6FBD-062591 (RMAL# 015770-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1989 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the asterisk (*) on the data sheets (Form I) as per the 1989 QAPP.

During the orignal extraction of sample 015770-01MSD the spiking compounds were inadvertently omitted, therefore, the sample required reextraction. The reextraction took place outside holding times.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 07-15-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel E. Holtz **Date:** 7-15-91
Joel E. Holtz
Program Administrator

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
015570-0001-SA	SLP6-062591	AQUEOUS	25 JUN 91		26 JUN 91
015570-0001-MS	SLP6MS-062591	AQUEOUS	25 JUN 91		26 JUN 91
015570-0001-SD	SLP6SD-062591	AQUEOUS	25 JUN 91		26 JUN 91
015570-0002-SA	SLP6D-062591	AQUEOUS	25 JUN 91		26 JUN 91
015570-0003-SA	SLP6FB-062591	AQUEOUS	25 JUN 91		26 JUN 91
015570-0004-SA	SLP6FBD-062591	AQUEOUS	25 JUN 91		26 JUN 91

Enseco
A Corning Company

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 015570

PPT-PAH

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: City of ST Louis PARK

PROJECT:

SAMPLING COMPANY: SAME

SAMPLING SITE: SAME

TEAM LEADER: MJH

SAMPLE SAFE™ CONDITIONS

PACKED BY: MJH | SEAL NUMBER:

SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY: | CONDITION OF CONTENTS: f

SEALED FOR SHIPPING BY: MJH | INITIAL CONTENTS TEMP: °C

SEAL NUMBER: | SAMPLING STATUS: ☐ Done ☐ Continuing Until

SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No | CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
6-25-91		SLPG[illegible]-062591 01	IXL AMBER	6	PPL PAH	
6-25-91		SLPG[illegible]D-062591 02	IXL AMBER	6	PPL PAH	
6-25-91		SLPG[illegible]MS-062591 01 MS	IXL AMBER	6	PPL PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MJH

METHOD OF SHIPMENT: FED EXP | AIRBILL NUMBER: 2865076384

RECEIVED FOR LAB: RMAL | SIGNED: [signature] | DATE/TIME: 06-26-91 800

ENSECO PROJECT NUMBER: 15570

ENS—1133

White – CLIENT Pink – LAB

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT: CITY OF ST LOUIS PARK
PROJECT:
SAMPLING COMPANY: SAME
SAMPLING SITE: SAME
TEAM LEADER: MZK

SAMPLE SAFE™ CONDITIONS

PACKED BY: MZK
SEAL NUMBER:
SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY:
CONDITION OF CONTENTS:
SEALED FOR SHIPPING BY: MZK
INITIAL CONTENTS TEMP: °C
SEAL NUMBER:
SAMPLING STATUS: ☐ Done ☐ Continuing Until
SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No
CONTENTS TEMPERATURE UPON RECEIPT BY LAB: °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
6-25-91		SLPGMSD-062591 0150	1XL AMBER	6	PPL PAH	
6-25-91		SLPGFB-062591 05	1XL AMBER	6	PPL PAH	
6-25-91		SLPGFBD-062591 04	1XL AMBER	6	PPL PAH	

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY: MZK
METHOD OF SHIPMENT: FED EXP
AIRBILL NUMBER: 2865076384
RECEIVED FOR LAB: RMAL
SIGNED:
DATE/TIME: 06-26-91 0800
ENSECO PROJECT NUMBER: 15570

ENS—1133

White – CLIENT Pink – LAB

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Final #15570

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15570-01

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15570-01

Sample wt/vol: 4040 (g/ml) ML Lab File ID: X3189

Level: (low/med) LOW Date Received: 06/26/91

% Moisture: not dec. dec. Date Extracted: 06/27/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/01/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.124

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	32	
95-13-6	1H-Indene	6.1	
91-20-3	Naphthalene	2.3	JB
4565-32-6	Benzo(B)Thiophene	2.7	*
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	1.2	J
91-57-6	2-Methylnaphthalene	1.9	B
90-12-0	1-Methylnaphthalene	1.1	J *
92-52-4	Biphenyl	1.8	J
208-96-8	Acenaphthylene	1.7	*
83-32-9	Acenaphthene	10	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.7	*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	2.5	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15570-02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15570-02

Sample wt/vol: 3940 (g/ml) ML Lab File ID: X3192

Level: (low/med) LOW Date Received: 06/26/91

% Moisture: not dec. dec. Date Extracted: 06/27/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/02/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.127

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.2	U
496-11-7	2,3-Dihydroindene	36	
95-13-6	1H-Indene	6.5	
91-20-3	Naphthalene	2.4	JB*
4565-32-6	Benzo(B)Thiophene	3.1	*
91-22-5	Quinoline	1.4	
120-72-9	1H-Indole	2.9	*
91-57-6	2-Methylnaphthalene	2.4	B
90-12-0	1-Methylnaphthalene	1.3	J *
92-52-4	Biphenyl	1.9	J
208-96-8	Acenaphthylene	1.7	*
83-32-9	Acenaphthene	11	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.5	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.2	J *
206-44-0	Fluoranthene	1.8	
129-00-0	Pyrene	2.1	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.4	J

1.4

228

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15570-03

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15570-03

Sample wt/vol: 4180 (g/ml) ML Lab File ID: X3193

Level: (low/med) LOW Date Received: 06/26/91

% Moisture: not dec. dec. Date Extracted: 06/27/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/02/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	1.3	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	4.3	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	1.6	J *
91-57-6	2-Methylnaphthalene	4.2	B
90-12-0	1-Methylnaphthalene	2.3	*
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.2	*
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.2	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.5	
129-00-0	Pyrene	3.8	
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.2	J *

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15570-01MS

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15570-01MS

Sample wt/vol: 4160 (g/ml) ML Lab File ID: X3190

Level: (low/med) LOW Date Received: 06/26/91

% Moisture: not dec. dec. Date Extracted: 06/27/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/02/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	29	
95-13-6	1H-Indene	10	SC
91-20-3	Naphthalene	7.5	B SC
4565-32-6	Benzo(B)Thiophene	2.4	*
91-22-5	Quinoline	8.2	SC
120-72-9	1H-Indole	1.4	J *
91-57-6	2-Methylnaphthalene	8.9	B SC
90-12-0	1-Methylnaphthalene	1.3	J *
92-52-4	Biphenyl	2.4	J
208-96-8	Acenaphthylene	1.3	*
83-32-9	Acenaphthene	8.9	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	8.4	SC
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	3.4	B
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.4	
129-00-0	Pyrene	1.7	*
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	5.2	SC
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.4	J *SC
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	1.2	J *

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

15570-01MSD

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 15570-01MSD

Sample wt/vol: 4240 (g/ml) ML Lab File ID: X3197

Level: (low/med) LOW Date Received: 06/26/91

% Moisture: not dec. dec. Date Extracted: 07/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	4.8	U	
496-11-7	2,3-Dihydroindene	23		
95-13-6	1H-Indene	7.8		*SC
91-20-3	Naphthalene	5.9	J	SC
4565-32-6	Benzo(B)Thiophene	1.7		*
91-22-5	Quinoline	5.2		*
120-72-9	1H-Indole	1.0	J	*
91-57-6	2-Methylnaphthalene	7.1		SC
90-12-0	1-Methylnaphthalene	1.5	U	
92-52-4	Biphenyl	1.1	J	
208-96-8	Acenaphthylene	1.3	U	
83-32-9	Acenaphthene	6.3		
132-64-9	Dibenzofuran	0.9	U	
86-73-7	Fluorene	5.7		SC
132-65-0	Dibenzothiophene	1.0	U	
85-01-8	Phenanthrene	1.5		
120-12-7	Anthracene	1.0	U	
260-94-6	Acridine	2.7	U	
86-74-8	Carbazole	1.8	U	
206-44-0	Fluoranthene	1.3	U	
129-00-0	Pyrene	1.2	J	
56-55-3	Benzo(A)Anthracene	2.4	U	
218-01-9	Chrysene	2.1	J	
205-99-2	Benzo(B)Fluoranthene	2.4	U	
207-08-9	Benzo(K)Fluoranthene	2.2	U	
192-97-2	Benzo(E)Pyrene	1.8	U	SC
50-32-8	Benzo(A)Pyrene	2.2	U	
198-55-0	Perylene	2.4	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U	
53-70-3	Dibenz(A,H)Anthracene	1.5	U	
191-24-2	Benzo(G,H,I)Perylene	2.6	U	

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	15570-01	88	93	53
2	15570-01MS	78	82	54
3	15570-01MSD	54	60	30
4	15570-02	103	105	63
5	15570-03	97	98	91
6	BLK01	94	94	88
7	BLK02	71	75	60
8				

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 15570-01 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	9.60	6.08	10.5	46
Naphthalene	9.60	2.26	7.52	55
Quinoline	9.60	ND	8.16	85
2-Methylnaphthalene	9.60	1.93	8.94	73
Fluorene	9.60	ND	8.43	88
Chrysene	9.60	ND	5.16	54
Benzo(E)Pyrene	9.60	ND	1.43	15

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	9.44	7.76	18	88
Naphthalene	9.44	5.87	38	37
Quinoline	9.44	5.18	55	43
2-Methylnaphthalene	9.44	7.10	55	28
Fluorene	9.44	5.67	60	38
Chrysene	9.44	2.08	22	84
Benzo(E)Pyrene	9.44	ND	ND	200

Comments:

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Lab File ID: X3187 Lab Sample ID: BL062791

Instrument ID: 4500-X Date Extracted: 06/27/91

Matrix: (soil/water) WATER Date Analyzed: 07/01/91

Level: (low/med) LOW Time Analyzed: 2207

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	15570-01	15570-01	X3189	06/27/91
2	15570-01MS	15570-01MS	X3190	06/27/91
3	15570-02	15570-02	X3192	06/27/91
4	15570-03	15570-03	X3193	06/27/91
5				

Comments:

1B

EPA SAMPLE NO.

BLK01

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: X3187

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 06/27/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/01/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.1	U
496-11-7	2,3-Dihydroindene	1.4	U
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.1	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.3	
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.3	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	1.1	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	2.8	U

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK02

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Lab File ID: X3196 Lab Sample ID: BL070491

Instrument ID: 4500-X Date Extracted: 07/04/91

Matrix: (soil/water) WATER Date Analyzed: 07/08/91

Level: (low/med) LOW Time Analyzed: 2253

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	15570-01MSD	15570-01MSD	X3197	07/08/91

Comments:

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 15570 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 4250 (g/ml) ML Lab File ID: X3196

Level: (low/med) LOW Date Received:

% Moisture: not dec. dec. Date Extracted: 07/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 07/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.8	U
496-11-7	2,3-Dihydroindene	1.3	U
95-13-6	1H-Indene	0.8	U
91-20-3	Naphthalene	6.1	U
4565-32-6	Benzo(B)Thiophene	0.8	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	0.8	U
90-12-0	1-Methylnaphthalene	1.5	U
92-52-4	Biphenyl	4.1	U
208-96-8	Acenaphthylene	1.3	U
83-32-9	Acenaphthene	1.2	U
132-64-9	Dibenzofuran	0.9	U
86-73-7	Fluorene	0.9	U
132-65-0	Dibenzothiophene	1.0	U
85-01-8	Phenanthrene	1.2	U
120-12-7	Anthracene	1.0	U
260-94-6	Acridine	2.7	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.3	U
129-00-0	Pyrene	1.3	U
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.6	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.6	U

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO-RMAL Contract No:

Lab Code: ENSECO Case No: 15570 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3186	07/01/91	1925
BLK01	X3187	07/01/91	2207
15570-01	X3189	07/02/91	2349
15570-01MS	X3190	07/02/91	0042
15570-02	X3192	07/02/91	0227
15570-03	X3193	07/02/91	0319

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO-RMAL Contract No:

Lab Code: ENSECO Case No: 15570 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40 PPB_PAH_STD	X3195	07/08/91	1835
BLK02	X3196	07/08/91	2253
15570-01MSD	X3197	07/08/91	2344

INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO-RMAL Lab Code: ENSECO Case No: 15570

Instrument ID: 4500-X Calibration Date(s): 03/25/91

Maximum % RSD is 35%

Lab File ID: RRF 240= X2942	RRF 20= X2941 RRF 1200= X2943			RRF 40= X2940 RRF 4800= X2944			
COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	1200PPB RRF	4800PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.932	0.934	0.887	0.921	0.926	0.920	2.1
2,3-Dihydroindene	0.726	0.781	0.762	0.802	0.805	0.775	4.2
1H-Indene	0.743	0.817	0.739	0.788	0.794	0.776	4.4
Naphthalene	1.722	1.639	1.730	1.794	1.817	1.740	4.0
Benzo(B)Thiophene	1.342	1.230	1.277	1.319	1.330	1.300	3.5
Quinoline	0.592	0.740	0.815	0.961	1.029	0.827	21.1
1H-Indole	0.820	0.788	0.928	1.029	1.074	0.928	13.5
2-Methylnaphthalene	0.673	0.766	0.753	0.783	0.795	0.756	6.5
1-Methylnaphthalene	0.727	0.800	0.814	0.849	0.858	0.810	6.4
Biphenyl	1.060	1.117	1.201	1.263	1.273	1.183	7.8
Acenaphthylene	1.280	1.387	1.493	1.714	1.796	1.534	14.2
Acenaphthene	1.004	0.998	1.052	1.117	1.115	1.057	5.5
Dibenzofuran	1.257	1.271	1.399	1.466	1.488	1.376	7.8
Fluorene	1.039	1.089	1.150	1.223	1.248	1.150	7.7
Dibenzothiophene	0.837	0.810	0.815	0.861	0.802	0.825	2.9
Phenanthrene	0.835	0.880	0.888	0.940	0.885	0.886	4.2
Anthracene	0.669	0.787	0.849	0.949	0.913	0.833	13.3
Acridine	0.320	0.442	0.529	0.692	0.685	0.534	29.9
Carbazole	0.645	0.618	0.703	0.787	0.754	0.701	10.1
Fluoranthene	0.930	1.016	0.984	1.079	1.020	1.006	5.4
Pyrene	1.238	1.180	1.050	1.102	1.044	1.123	7.5
Benzo(A)Anthracene	1.038	1.130	1.248	1.222	1.135	1.155	7.2
Chrysene	1.414	1.388	1.354	1.245	1.132	1.307	8.9
Benzo(B)Fluoranthene	1.029	1.039	1.054	1.060	1.053	1.047	1.2
Benzo(K)Fluoranthene	1.543	1.271	1.598	1.356	1.346	1.423	9.8
Benzo(E)Pyrene	1.088	1.152	1.075	1.033	0.968	1.063	6.4
Benzo(A)Pyrene	0.930	1.027	1.052	1.077	1.016	1.020	5.5
Perylene	0.729	0.740	0.809	0.467	0.830	0.715	20.3
Indeno(1,2,3-CD)Pyrene	1.289	1.158	1.156	1.222	1.154	1.196	5.0
Dibenz(A,H)Anthracene	1.040	1.021	1.056	1.060	1.020	1.039	1.8
Benzo(G,H,I)Perylene	1.068	1.067	1.118	1.084	1.026	1.073	3.1
D8-Naphthalene	1.530	1.508	1.569	1.622	1.661	1.578	4.0
D10-Flourene	0.860	0.863	0.931	1.000	1.024	0.936	8.1
D12-Chrysene	1.410	1.193	1.139	1.029	0.944	1.143	15.6

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO-RMAL Lab Code: ENSECO Case No: 15570

Instrument ID: 4500-X Calibration Date(s): 07/01/91 Time: 1925

Lab ID: X3186 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	1.055	-14.7
2,3-Dihydroindene	0.775	0.948	-22.3
1H-Indene	0.776	0.893	-15.1
Naphthalene	1.740	2.201	-26.5
Benzo(B)Thiophene	1.300	1.430	-10.0
Quinoline	0.827	0.977	-18.1
1H-Indole	0.928	1.001	-7.9
2-Methylnaphthalene	0.756	0.876	-15.9
1-Methylnaphthalene	0.810	0.932	-15.1
Biphenyl	1.183	1.313	-11.0
Acenaphthylene	1.534	1.681	-9.6
Acenaphthene	1.057	1.105	-4.5
Dibenzofuran	1.376	1.444	-4.9
Fluorene	1.150	1.176	-2.3
Dibenzothiophene	0.825	0.882	-6.9
Phenanthrene	0.886	0.931	-5.1
Anthracene	0.833	0.844	-1.3
Acridine	0.534	0.529	0.9
Carbazole	0.701	0.699	0.3
Fluoranthene	1.006	1.065	-5.9
Pyrene	1.123	1.110	1.2
Benzo(A)Anthracene	1.155	1.190	-3.0
Chrysene	1.307	1.260	3.6
Benzo(B)Fluoranthene	1.047	1.171	-11.8
Benzo(K)Fluoranthene	1.423	1.131	20.5
Benzo(E)Pyrene	1.063	1.060	0.3
Benzo(A)Pyrene	1.020	0.974	4.5
Perylene	0.715	0.777	-8.7
Indeno(1,2,3-CD)Pyrene	1.196	1.048	12.4
Dibenz(A,H)Anthracene	1.039	0.962	7.4
Benzo(G,H,I)Perylene	1.073	0.980	8.7
D8-Naphthalene	1.578	1.787	-13.2
D10-Flourene	0.936	0.912	2.6
D12-Chrysene	1.143	1.027	10.1

CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO-RMAL Lab Code: ENSECO Case No: 15570

Instrument ID: 4500-X Calibration Date(s): 07/08/91 Time: 1835

Lab ID: X3195 Initial Calibration Date: 03/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.920	0.945	-2.7
2,3-Dihydroindene	0.775	0.867	-11.9
1H-Indene	0.776	0.793	-2.2
Naphthalene	1.740	1.931	-11.0
Benzo(B)Thiophene	1.300	1.356	-4.3
Quinoline	0.827	0.832	-0.6
1H-Indole	0.928	0.930	-0.2
2-Methylnaphthalene	0.756	0.895	-18.4
1-Methylnaphthalene	0.810	1.011	-24.8
Biphenyl	1.183	1.335	-12.8
Acenaphthylene	1.534	1.457	5.0
Acenaphthene	1.057	1.087	-2.8
Dibenzofuran	1.376	1.405	-2.1
Fluorene	1.150	1.137	1.1
Dibenzothiophene	0.825	0.787	4.6
Phenanthrene	0.886	0.932	-5.2
Anthracene	0.833	0.756	9.2
Acridine	0.534	0.404	24.3
Carbazole	0.701	0.620	11.6
Fluoranthene	1.006	0.976	3.0
Pyrene	1.123	1.123	0.0
Benzo(A)Anthracene	1.155	1.162	-0.6
Chrysene	1.307	1.263	3.4
Benzo(B)Fluoranthene	1.047	1.162	-11.0
Benzo(K)Fluoranthene	1.423	1.084	23.8
Benzo(E)Pyrene	1.063	0.987	7.1
Benzo(A)Pyrene	1.020	0.891	12.6
Perylene	0.715	0.697	2.5
Indeno(1,2,3-CD)Pyrene	1.196	0.940	21.4
Dibenz(A,H)Anthracene	1.039	0.963	7.3
Benzo(G,H,I)Perylene	1.073	0.893	16.8
D8-Naphthalene	1.578	1.769	-12.1
D10-Flourene	0.936	0.997	-6.5
D12-Chrysene	1.143	1.148	-0.4

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No: 15570 SAS No.: SDG No:

Lab File ID (Standard): X3186 Date Analyzed: 07/01/91

Instrument ID: 4500-X Time Analyzed: 1925

	IS#1 (ACN) AREA	#	IS#2 (PHN) AREA	#	IS#3 (BAP) AREA	#
12 HOUR STD	537000		918000		631000	
UPPER LIMIT	1074000		1836000		1262000	
LOWER LIMIT	268000		459000		316000	
SAMPLE NO.						
15570-01	602000		1051000		748000	
15570-01MS	589000		920000		613000	
15570-02	609000		965000		669000	
15570-03	509000		828000		584000	
BLK01	416000		737000		463000	

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO-RMAL Contract:

Lab Code: ENSECO Case No: 15570 SAS No.: SDG No:

Lab File ID (Standard): X3195 Date Analyzed: 07/08/91

Instrument ID: 4500-X Time Analyzed: 1835

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	588000	1110000	689000
UPPER LIMIT	1176000	2220000	1378000
LOWER LIMIT	294000	555000	344000
SAMPLE NO.			
15570-01MSD	675000	1232000	804000
BLK02	393000	761000	496000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

CASE NARRATIVE

for

City of St. Louis Park

June 21, 1991

Enseco - RMAL Project Number 014773

Introduction

Twelve aqueous samples (including MS and MSD) were received at Enseco Rocky Mountain Analytical Laboratory on May 1, 1991. The samples were logged in under RMAL project number 014773. Sample PCJ-SLP6FB-043091 (RMAL# 014773-03) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for low level part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the 1989 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Samples 014773-06 and 09 were analyzed and reported at dilutions due to interference with the internal standards during the original analysis. The reanalysis data are reported. Surrogates could not be measured in these samples due to the dilutions performed.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with the asterisk (*) on the data sheets (Form I) as per the 1989 QAPP.

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax. 303/431-7171

This data package is in compliance with the terms and conditions of the 1989 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy Date: 06-21-91
Tracy Conroy
Data Control Supervisor

Approved by: Joel S. Holtz Date: 6-21-91
Joel Holtz
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
014773-0001-SA	PCJ-SLP6-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-MS	PCJ-SLP6MS-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0001-SD	PCJ-SLP6MSD-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0002-SA	PCJ-SLP6D-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0003-SA	PCJ-SLP6FB-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0004-SA	PCJ-SLP7-043091	AQUEOUS	30 APR 91		01 MAY 91
014773-0005-SA	W122	AQUEOUS	30 APR 91	12:25	01 MAY 91
014773-0006-SA	W409	AQUEOUS	30 APR 91	10:25	01 MAY 91
014773-0007-SA	W408	AQUEOUS	30 APR 91	09:15	01 MAY 91
014773-0008-SA	P116	AQUEOUS	30 APR 91	13:40	01 MAY 91
014773-0009-SA	W411	AQUEOUS	30 APR 91	14:20	01 MAY 91
014773-0010-SA	W129	AQUEOUS	30 APR 91	15:15	01 MAY 91

Rocky Mountain
Analytical Laboratory

Enseco
A CORNING Company

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

14773-04

Lab Name: ENSECO-RMAL Contract No.:

Lab Code: ENSECO Case No.: 14773 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 14773-04

Sample wt/vol: 4150 (g/ml) ML Lab File ID: X3066

Level: (low/med) LOW Date Received: 05/01/91

% Moisture: not dec. dec. Date Extracted: 05/04/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 06/04/91

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 0.120

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	4.9	U
496-11-7	2,3-Dihydroindene	9.6	
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	2.9	JB
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.3	U
120-72-9	1H-Indole	2.4	U
91-57-6	2-Methylnaphthalene	3.0	B
90-12-0	1-Methylnaphthalene	1.7	*
92-52-4	Biphenyl	1.1	J *
208-96-8	Acenaphthylene	3.7	
83-32-9	Acenaphthene	8.5	
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	B*
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.8	U
86-74-8	Carbazole	1.8	U
206-44-0	Fluoranthene	1.1	J
129-00-0	Pyrene	3.6	B
56-55-3	Benzo(A)Anthracene	2.4	U
218-01-9	Chrysene	2.7	U
205-99-2	Benzo(B)Fluoranthene	2.4	U
207-08-9	Benzo(K)Fluoranthene	2.2	U
192-97-2	Benzo(E)Pyrene	1.8	U
50-32-8	Benzo(A)Pyrene	2.2	U
198-55-0	Perylene	2.4	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U
53-70-3	Dibenz(A,H)Anthracene	1.5	U
191-24-2	Benzo(G,H,I)Perylene	2.7	U

RAP SECTION 7.3.(C) MONITORING

3RD QUARTER - 1991

Enseco
A Corning Company

CASE NARRATIVE

FOR

City of St. Louis Park

October 26, 1991

Enseco - RMAL Project Number 016687

Introduction

Fifteen aqueous samples (includes QC) were received at Enseco Rocky Mountain Analytical Laboratory on August 28, 1991. The samples were logged in under RMAL project number 016687. Sample PCJ-SLP6FBD-082791 (RMA # 016687-04) was extracted and held as per the QAPP. A cross reference associating the RMAL sample numbers to the actual field sample numbers is included. The samples were analyzed for part-per-trillion (ppt) polynuclear aromatic hydrocarbons (PAH).

Data Quality Assessment

The results contained in this report were reviewed relative to data acceptance criteria as specified in the April 1990 QAPP for completeness, precision, accuracy, representativeness and defensibility of the data. Unless otherwise stated below, no quality control problems or technical difficulties were encountered which would impact the interpretation or use of data in this report.

PPT PAH

Due to concentrations of target compounds present in excess of calibration range, samples 016687-08, 10, 11, 12 and 13 were analyzed at a dilution. Surrogates could not be measured in the samples due to the dilutions performed.

In the matrix spike/spike duplicate analyses for sample 16687-01, several spike components are outside control limits. Indene and Napthalene results are biased due to the presence of these compounds in the original sample. Chrysene and Benzene show low recoveries. All quantitations were checked and found to be correct. Due to limited sample available, reextractions could not be performed.

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Arvada, Colorado 80002
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Samples 16687-02, 03, 05, 06, 01MSD show surrogates which have exceeded the upper control limits. All instrument calibration, surrogate standard concentration, etc. were checked and found to be in control. It has been concluded that an interference specific to the surrogate is present which resulted in the high recovery. This interference does not affect the quantitation of target compounds.

Surrogate recoveries for D8-napthalene and D12-chrysene have exceeded control limits in both method blanks indicating a slight over concentration of the sample or a spike addition error during the extraction process. Target compound data for both method blanks were evaluated and found to be within control, therefore data is accepted.

The 4800 ng/ml and the 2400 ng/ml standards had excessive saturation, therefore they were not used as the upper range for the 5-point calibration curve. Instead, the 1200 ng/ml was used as a high point calibration, while a 600 ng/ml was used for the mid-point calibration.

All samples show target compounds that do not meet secondary ion confirmation. In some instances a compound that does not meet secondary ion confirmation criteria may still be determined to be present in the sample after close inspection of the data by the analyst. Supportive data includes mass chromatograms maxima at the same scan for primary and secondary ions, as well as discernible quantitation interference with the secondary ion. These compounds are flagged with asterisk (*) on the data sheets (Form I) as per the 1990 QAPP.

This data package is in compliance with the terms and conditions of the 1990 QAPP, both technically and for completeness, for other than the conditions detailed above.

Reported by: Tracy Conroy **Date:** 10/26/91
Tracy Conroy
Data Control Supervisor

Approved by: Debbie Fazio **Date:** 10/26/91
Debbie Fazio
Program Administrator

SAMPLE DESCRIPTION INFORMATION
for
City of St. Louis Park

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
016687-0001-SA	PCJ-SLP6-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-MS	PCJ-SLP6MS-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0001-SD	PCJ-SLP6MSD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0002-SA	PCJ-SLP6D-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0003-SA	PCJ-SLP6FB-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0004-SA	PCJ-SLP6FBD-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0005-SA	PCJ-SLP14-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0006-SA	PCJ-SLP16-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0007-SA	PCJ-SLP7-082791	AQUEOUS	27 AUG 91		28 AUG 91
016687-0008-SA	STPW411082791	AQUEOUS	27 AUG 91	15:30	28 AUG 91
016687-0009-SA	STPP116082791	AQUEOUS	27 AUG 91	14:10	28 AUG 91
016687-0010-SA	STPW409082791	AQUEOUS	27 AUG 91	14:30	28 AUG 91
016687-0011-SA	STPW408082791	AQUEOUS	27 AUG 91	11:20	28 AUG 91
016687-0012-SA	STPW122082791	AQUEOUS	27 AUG 91	10:10	28 AUG 91
016687-0013-SA	STPW129082791	AQUEOUS	27 AUG 91	09:00	28 AUG 91

TABLE OF CONTENTS

FOR

CITY OF ST. LOUIS PARK

RMAL PROJECT# 016727

PPT-PAH

Qualifier Codes and their Usage

U = Indicates compound was analyzed for but not detected. The sample quantitation limit is corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL (contract required quantitation limit) is multiplied by two to account for the fact that only half of the extract is recovered.

J = Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results.

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. B codes do not necessarily invalidate the data but are dependent upon the judgement of the reviewer in applying the validation guidelines. This flag is used for a TIC as well as for a positively identified target compound list (TCL) compound.

E = This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D = This flag identifies all compounds identified during a re-analysis of a diluted sample.

A = This flag indicates that a TIC is a suspected aldol-condensation product.

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Arvada, Colorado 80002
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CHAIN OF CUSTODY

No.

Attn: _____

Enseco Client City of ST Louis PARK

Project _____

Sampling Co. SAME

Sampling Site SAME

Team Leader M2K

SAMPLE SAFE™ CONDITIONS

1 Packed by M2K Seal # _____

2 Seal Intact Upon Receipt by Sampling Co Yes No

3 Condition of Contents: _____

4. Sealed for Shipping by _____

5 Initial Contents Temp.. _____ °C Seal # _____

6 Sampling Status Done Continuing Until _____

7. Seal Intact Upon Receipt by Laboratory. Yes No

8 Contents Temperature Upon Receipt by Lab _____ °C

9. Condition of Contents: 16687

Date	Time	Sample ID/Description	Sample Type	No Containers	Analysis Parameters	Remarks
8-27-91		PCU-SLPG-082791	1VL AMBER	6	PPL PAH	16687 01
8-27-91		PCU-SLPGD-082791	1VL AMBER	6	PPL PAH	02
8-27-91		PCU-SLPGMS-082791	1VL AMBER	6	PPL PAH	03 MS

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by (signed)	Received by. (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by. M2K

Method of Shipment. Fed Exp Airbill # [illegible]

Received for Lab RMAL Signed [illegible] Date/Time 9/29/91 8:30

Project No _____

White and Pink Copies Yellow to Sampler

SS-001

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile 303/431-7171

Attn: _____

CHAIN OF CUSTODY

No.

Enseco Client City of ST Louis PARK

Project _____

Sampling Co. SAME

Sampling Site SAME

Team Leader MZK

SAMPLE SAFE™ CONDITIONS

1 Packed by MZK Seal # _____

2 Seal Intact Upon Receipt by Sampling Co Yes No

3 Condition of Contents: _____

4 Sealed for Shipping by MZK

5 Initial Contents Temp _____ °C Seal # _____

6 Sampling Status Done Continuing Until _____

7 Seal Intact Upon Receipt by Laboratory Yes No

8 Contents Temperature Upon Receipt by Lab _____ °C

9 Condition of Contents: _____

Date	Time	Sample ID/Description	Sample Type	No Containers	Analysis Parameters	Remarks
8-27-91		PCJ-SLPGMSD-082791	IVL AMBER	6	PPL PAH	16887. DUP
8-27-91		PCJ-SLPGFB-082791	IVL AMBER	6	PPL PAH	03
8-27-91		PCJ-SLPGFBD-082791	IVL AMBER	6	PPL PAH	04

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by (signed)	Received by. (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by. MZK

Method of Shipment. FED Exp Airbill # 256711221 13

Received for Lab RMAL Signed MJRoth Date/Time 8/28/91 @ 8:00

Enseco Project No _____

White and Pink Copies to Yellow to Sampler

SS-001

Enseco - Rocky Mountain Analytical
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile. 303/431-7171

CHAIN OF CUSTODY

No.

Attn: _____

Enseco Client City of ST Louis PARK

Project _____

Sampling Co. SAME

Sampling Site SAME

Team Leader M2K

SAMPLE SAFE™ CONDITIONS

1 Packed by. M2K Seal # _____

2. Seal Intact Upon Receipt by Sampling Co. Yes No

3 Condition of Contents. _____

4 Sealed for Shipping by M2K

5 Initial Contents Temp . _____ °C Seal # _____

6. Sampling Status Done Continuing Until _____

7. Seal Intact Upon Receipt by Laboratory Yes No

8 Contents Temperature Upon Receipt by Lab _____ °C

9 Condition of Contents. _____

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
8-27-91		PCJ-SLP14-082791	IXL AMBER	6	PPL PAH	16857 05
8-27-91		PCJ-SLP16-082791	IXL AMBER	6	PPL PAH	06
8-27-91		PCJ-SLP7-082791	IXL AMBER	6	PPL PAH	07

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by. (signed)	Received by. (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by. M2K

Method of Shipment. Fed Exp Airbill # _____

Received for Lab: RMAL Signed MJ Potts Date/Time 8/29/91 08:00

Enseco Project No _____

White and Pink Copies to L... Yellow to Sampler

SS-001

Enseco - Rocky Mountain Analytical

4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Facsimile: 303/431-7171

Attn: _____

CHAIN OF CUSTODY

No.

SAMPLE SAFE™ CONDITIONS

1. Packed by. _____ Seal # _____
2. Seal Intact Upon Receipt by Sampling Co : Yes No
3. Condition of Contents: _____
4. Sealed for Shipping by: _____
5. Initial Contents Temp.. _____ °C Seal # _____
6. Sampling Status: Done Continuing Until _____
7. Seal Intact Upon Receipt by Laboratory. Yes No
8. Contents Temperature Upon Receipt by Lab: _____ °C
9 Condition of Contents: _____

Enseco Client _____

Project CITY OF ST. LOUIS PAH

Sampling Co. EASI CONSULTING & ENGINEERING

Sampling Site SLP

Team Leader MM

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
		WH	WATER		PPT & PAH	1688T
9/27/91	1530	STP WH1108279 1		6		08
↓	1410	STP P116 082791		↓		09
↓	1430	STP W409 082791		↓		10
			↓		↓	

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1				
2				
3				

SHIPPING DETAILS

Delivered to Shipper by: _____

Method of Shipment: _____ Airbill # _____

Received for Lab: RMAL Signed. _____ Date/Time 9/28/91 08:00

Enseco Project No. _____

White and Pink Copies to L Yellow to Sampler

SS-001

Enseco
A Corning Company

Rocky Mountain Analytical Laboratory
4955 Yarrow Street
Arvada, CO 80002
303/421-6611 FAX: 303/431-7171

CHAIN OF CUSTODY

ENSECO CLIENT		SAMPLE SAFE™ CONDITIONS: PACKED BY	SEAL NUMBER
PROJECT: CITY OF ST. LOUIS PARK		SEAL INTACT UPON RECEIPT BY SAMPLING COMPANY	CONDITION OF CONTENTS
SAMPLING COMPANY: ENVIRON CONSULTING & ENGINEERING		SEALED FOR SHIPPING BY	INITIAL CONTENTS TEMP °C
SAMPLING SITE: SLP		SEAL NUMBER: #2	SAMPLING STATUS: ☐ Done ☐ Continuing Until
TEAM LEADER: Mm		SEAL INTACT UPON RECEIPT BY LAB: ☐ Yes ☐ No	CONTENTS TEMPERATURE UPON RECEIPT BY LAB °C

DATE	TIME	SAMPLE ID/DESCRIPTION	SAMPLE TYPE	# CONTAINERS	ANALYSIS PARAMETERS	REMARKS
8/27/91	1120	STPW4C&C082791	WATER		PPTE PHII	16857 11
"	1010	STPW122 082791	"		"	12
"	900	STPW124 082791	"		"	13

CUSTODY TRANSFERS PRIOR TO SHIPPING

RELINQUISHED BY (SIGNED)	RECEIVED BY (SIGNED)	DATE	TIME

SHIPPING DETAILS

DELIVERED TO SHIPPER BY:

METHOD OF SHIPMENT:

AIRBILL NUMBER:

RECEIVED FOR LAB: RMAL

SIGNED: Michael J Potts

DATE/TIME: 8/28/91 08:00

ENSECO PROJECT NUMBER:

ENS—1133

White - CLIENT Pink - LAB

SUMMARY

DATA

PACKAGE

FOR

City of St. Louis Park

Final # 16687

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16687-01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-01

Sample wt/vol: 4240 (g/ml) ML Lab File ID: C4705

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/25/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.118

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.0		*
496-11-7	2,3-Dihydroindene	51	B	*
95-13-6	1H-Indene	9.2		
91-20-3	Naphthalene	14	B	
4565-32-6	Benzo(B)Thiophene	3.9		
91-22-5	Quinoline	1.3	U	
120-72-9	1H-Indole	2.4	U	
91-57-6	2-Methylnaphthalene	4.6	B	
90-12-0	1-Methylnaphthalene	2.9		*
92-52-4	Biphenyl	2.4	J	*
208-96-8	Acenaphthylene	1.3	U	
83-32-9	Acenaphthene	14		
132-64-9	Dibenzofuran	0.9	U	
86-73-7	Fluorene	0.98		*
132-65-0	Dibenzothiophene	1.0	U	
85-01-8	Phenanthrene	2.2	B	
120-12-7	Anthracene	1.0	U	
260-94-6	Acridine	2.7	U	
86-74-8	Carbazole	1.9		*
206-44-0	Fluoranthene	1.3		
129-00-0	Pyrene	1.1	J	
56-55-3	Benzo(A)Anthracene	2.4	U	
218-01-9	Chrysene	2.6	U	
205-99-2	Benzo(B)Fluoranthene	2.4	U	
207-08-9	Benzo(K)Fluoranthene	2.2	U	
192-97-2	Benzo(E)Pyrene	1.8	U	
50-32-8	Benzo(A)Pyrene	2.2	U	
198-55-0	Perylene	2.4	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U	
53-70-3	Dibenz(A,H)Anthracene	1.5	U	
191-24-2	Benzo(G,H,I)Perylene	2.6	U	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16687-02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-02

Sample wt/vol: 4090 (g/ml) ML Lab File ID: C4708

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.122

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.0	U	
496-11-7	2,3-Dihydroindene	60	B	*
95-13-6	1H-Indene	8.7		
91-20-3	Naphthalene	16	B	
4565-32-6	Benzo(B)Thiophene	4.6		
91-22-5	Quinoline	1.4	U	
120-72-9	1H-Indole	2.4	U	
91-57-6	2-Methylnaphthalene	4.8	B	
90-12-0	1-Methylnaphthalene	3.1		*
92-52-4	Biphenyl	2.5	J	*
208-96-8	Acenaphthylene	1.4	U	
83-32-9	Acenaphthene	15		
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	1.1		*
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	3.3	B	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.8	U	
86-74-8	Carbazole	1.8	U	
206-44-0	Fluoranthene	1.8		
129-00-0	Pyrene	2.4		
56-55-3	Benzo(A)Anthracene	2.4	U	
218-01-9	Chrysene	2.7	U	
205-99-2	Benzo(B)Fluoranthene	2.4	U	
207-08-9	Benzo(K)Fluoranthene	2.2	U	
192-97-2	Benzo(E)Pyrene	1.8	U	
50-32-8	Benzo(A)Pyrene	2.2	U	
198-55-0	Perylene	2.4	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.7	U	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16687-03

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-03

Sample wt/vol: 4070 (g/ml) ML Lab File ID: C4722

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.0	U	
496-11-7	2,3-Dihydroindene	5.2	B	*
95-13-6	1H-Indene	0.9	U	
91-20-3	Naphthalene	7.0	B	
4565-32-6	Benzo(B)Thiophene	0.9	U	
91-22-5	Quinoline	1.4	U	
120-72-9	1H-Indole	2.5	U	
91-57-6	2-Methylnaphthalene	5.1	B	
90-12-0	1-Methylnaphthalene	2.7	U	
92-52-4	Biphenyl	4.2	U	
208-96-8	Acenaphthylene	1.4	U	
83-32-9	Acenaphthene	1.3	U	
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	1.0	U	
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	1.8	B	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.9	U	
86-74-8	Carbazole	1.9	U	
206-44-0	Fluoranthene	1.4	U	
129-00-0	Pyrene	1.4	U	
56-55-3	Benzo(A)Anthracene	2.5	U	
218-01-9	Chrysene	2.8	U	
205-99-2	Benzo(B)Fluoranthene	2.5	U	
207-08-9	Benzo(K)Fluoranthene	2.3	U	
192-97-2	Benzo(E)Pyrene	1.9	U	
50-32-8	Benzo(A)Pyrene	2.3	U	
198-55-0	Perylene	2.5	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.8	U	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16687-07

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-07

Sample wt/vol: 4130 (g/ml) ML Lab File ID: C4712

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.121

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	1.4	J	*
496-11-7	2,3-Dihydroindene	21	B	*
95-13-6	1H-Indene	0.9	U	
91-20-3	Naphthalene	7.0	B	
4565-32-6	Benzo(B)Thiophene	0.9	U	
91-22-5	Quinoline	1.4	U	
120-72-9	1H-Indole	2.4	U	
91-57-6	2-Methylnaphthalene	5.4	B	*
90-12-0	1-Methylnaphthalene	2.5		*
92-52-4	Biphenyl	2.0	J	*
208-96-8	Acenaphthylene	5.2		
83-32-9	Acenaphthene	12		
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	1.5		*
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	2.6	B	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.8	U	
86-74-8	Carbazole	1.8	U	
206-44-0	Fluoranthene	1.2	J	
129-00-0	Pyrene	3.0		
56-55-3	Benzo(A)Anthracene	2.4	U	
218-01-9	Chrysene	2.7	U	
205-99-2	Benzo(B)Fluoranthene	2.4	U	
207-08-9	Benzo(K)Fluoranthene	2.2	U	
192-97-2	Benzo(E)Pyrene	1.8	U	
50-32-8	Benzo(A)Pyrene	2.2	U	
198-55-0	Perylene	2.0	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.0	U	
53-70-3	Dibenz(A,H)Anthracene	1.5	U	
191-24-2	Benzo(G,H,I)Perylene	2.7	U	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

16687-01MS

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-01MS

Sample wt/vol: 4060 (g/ml) ML Lab File ID: C4721

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.0	U	
496-11-7	2,3-Dihydroindene	26	B	
95-13-6	1H-Indene	6.9		SC
91-20-3	Naphthalene	14	B	SC
4565-32-6	Benzo(B)Thiophene	0.9	U	
91-22-5	Quinoline	6.5		SC
120-72-9	1H-Indole	2.5	U	
91-57-6	2-Methylnaphthalene	9.5	B	SC
90-12-0	1-Methylnaphthalene	2.4		*
92-52-4	Biphenyl	2.0	J	*
208-96-8	Acenaphthylene	1.4	U	
83-32-9	Acenaphthene	11		
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	9.0		SC
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	1.8	B	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.9	U	
86-74-8	Carbazole	1.7	J	*
206-44-0	Fluoranthene	1.0	J	
129-00-0	Pyrene	1.0	J	
56-55-3	Benzo(A)Anthracene	2.5	U	
218-01-9	Chrysene	4.3		SC
205-99-2	Benzo(B)Fluoranthene	2.5	U	
207-08-9	Benzo(K)Fluoranthene	2.3	U	
192-97-2	Benzo(E)Pyrene	1.9	U	
50-32-8	Benzo(A)Pyrene	2.3	U	
198-55-0	Perylene	2.5	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.8	U	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

16687-01MSD

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 16687-01MSD

Sample wt/vol: 4420 (g/ml) ML Lab File ID: C4707

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/30/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/26/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.113

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	4.6	U	
496-11-7	2,3-Dihydroindene	51	B	*
95-13-6	1H-Indene	19		SC
91-20-3	Naphthalene	25	B	SC
4565-32-6	Benzo(B)Thiophene	4.2		
91-22-5	Quinoline	9.2		SC
120-72-9	1H-Indole	2.3	U	
91-57-6	2-Methylnaphthalene	14	B	SC
90-12-0	1-Methylnaphthalene	3.4		*
92-52-4	Biphenyl	2.5	J	*
208-96-8	Acenaphthylene	1.3	U	
83-32-9	Acenaphthene	14		
132-64-9	Dibenzofuran	0.9	U	
86-73-7	Fluorene	10		SC
132-65-0	Dibenzothiophene	1.0	U	
85-01-8	Phenanthrene	2.2	B	
120-12-7	Anthracene	1.0	U	
260-94-6	Acridine	2.6	U	
86-74-8	Carbazole	1.5	J	*
206-44-0	Fluoranthene	1.2	J	
129-00-0	Pyrene	1.3	U	
56-55-3	Benzo(A)Anthracene	2.3	U	
218-01-9	Chrysene	3.7		SC
205-99-2	Benzo(B)Fluoranthene	2.3	U	
207-08-9	Benzo(K)Fluoranthene	2.1	U	
192-97-2	Benzo(E)Pyrene	1.7	U	
50-32-8	Benzo(A)Pyrene	2.1	U	
198-55-0	Perylene	2.3	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	1.9	U	
53-70-3	Dibenz(A,H)Anthracene	1.4	U	
191-24-2	Benzo(G,H,I)Perylene	2.6	U	

SP = Spike Compound

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Level: LOW

	EPA SAMPLE NO.	S1 (NAP) #	S2 (FLU) #	S3 (CHR) #
1	16687-01	103	112	61
2	16687-02	120 *	132	92
3	16687-03	100	110	157 *
4	16687-05	155 *	138	111
6	16687-06	134 *	131	45
7	16687-07	96	112	70
8	16687-08	D	D	D
9	16687-09	78	98	40
10	16687-10	D	D	D
11	16687-11	D	D	D
12	16687-12	D	D	D
13	16687-13	D	D	D
14	16687-01MS	78	99	56
15	16687-01MSD	112 *	118	56
16	BLK01	123 *	134	139 *
17	BLK02	120 *	124	123 *

	QC LIMITS
S1 (NAP) = D8-NAPHTHALENE	(14-108)
S2 (FLU) = D10-FLUORENE	(41-162)
S3 (CHR) = D12-CHRYSENE	(10-118)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix Spike - EPA Sample No.: 16687-01 LEVEL: LOW

Compound	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC
1H-Indene	9.84	9.18	6.86	-24
Naphthalene	9.84	14.0	13.5	-5
Quinoline	9.84	ND	6.52	66
2-Methylnaphthalene	9.84	4.65	9.46	49
Fluorene	9.84	0.985	8.96	81
Chrysene	9.84	ND	4.26	43
Benzo(E)Pyrene	9.84	ND	0.60	6

Compound	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD
1H-Indene	9.04	18.7	105	319
Naphthalene	9.04	24.9	121	217
Quinoline	9.04	9.15	101	42
2-Methylnaphthalene	9.04	14.5	109	76
Fluorene	9.04	10.3	103	24
Chrysene	9.04	3.74	41	5
Benzo(E)Pyrene	9.04	0.66	0	7

Comments:

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK01

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Lab File ID: C4720 Lab Sample ID: BLK01

Instrument ID: 4500-C Date Extracted: 08/31/91

Matrix: (soil/water) WATER Date Analyzed: 09/30/91

Level:(low/med) LOW Time Analyzed: 1654

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	16687-01	16687-01	C4705	09/25/91
2	16687-02	16687-02	C4708	09/26/91
3	16687-03	16687-03	C4722	09/30/91
4	16687-05	16687-05	C4723	09/30/91
5	16687-06	16687-06	C4724	09/30/91
6	16687-07	16687-07	C4712	09/26/91
7	16687-08	16687-08	C4725	09/30/91
8	16687-09	16687-09	C4714	09/26/91
9	16687-01MS	16687-01MS	C4721	09/30/91
10	16687-01MSD	16687-01MSD	C4707	09/26/91

Comments:

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BLK01

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK01

Sample wt/vol: 4000 (g/ml) ML Lab File ID: C4720

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 09/30/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.123

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q
271-89-6	2,3-Benzofuran	5.0	U
496-11-7	2,3-Dihydroindene	1.0	J
95-13-6	1H-Indene	0.9	U
91-20-3	Naphthalene	1.6	J
4565-32-6	Benzo(B)Thiophene	0.9	U
91-22-5	Quinoline	1.4	U
120-72-9	1H-Indole	2.5	U
91-57-6	2-Methylnaphthalene	1.6	
90-12-0	1-Methylnaphthalene	1.6	U
92-52-4	Biphenyl	4.2	U
208-96-8	Acenaphthylene	1.4	U
83-32-9	Acenaphthene	1.3	U
132-64-9	Dibenzofuran	1.0	U
86-73-7	Fluorene	1.0	U
132-65-0	Dibenzothiophene	1.1	U
85-01-8	Phenanthrene	2.0	
120-12-7	Anthracene	1.1	U
260-94-6	Acridine	2.9	U
86-74-8	Carbazole	1.9	U
206-44-0	Fluoranthene	1.4	U
129-00-0	Pyrene	1.4	U
56-55-3	Benzo(A)Anthracene	2.5	U
218-01-9	Chrysene	2.8	U
205-99-2	Benzo(B)Fluoranthene	2.5	U
207-08-9	Benzo(K)Fluoranthene	2.3	U
192-97-2	Benzo(E)Pyrene	1.9	U
50-32-8	Benzo(A)Pyrene	2.3	U
198-55-0	Perylene	2.5	U
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U
53-70-3	Dibenz(A,H)Anthracene	1.6	U
191-24-2	Benzo(G,H,I)Perylene	1.2	J

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLK02

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Lab File ID: C4758 Lab Sample ID: BLK02

Instrument ID: 4500-C Date Extracted: 08/31/91

Matrix: (soil/water) WATER Date Analyzed: 10/08/91

Level: (low/med) LOW Time Analyzed: 1658

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1	16687-10	16687-10	C4726	10/01/91
2	16687-11	16687-11	C4727	10/01/91
3	16687-12	16687-12	C4728	10/01/91
4	16687-13	16687-13	C4738	10/05/91

Comments:

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLK02

Lab Name: ENSECO Contract No.:

Lab Code: ENSECO Case No.: 16687 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: BLK02

Sample wt/vol: 4000 (g/ml) ML Lab File ID: C4758

Level: (low/med) LOW Date Received: 08/28/91

% Moisture: not dec. dec. Date Extracted: 08/31/91

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 10/08/91

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.125

CONCENTRATION UNITS: NG/L

CAS NO.	COMPOUND		Q	
271-89-6	2,3-Benzofuran	5.1	U	
496-11-7	2,3-Dihydroindene	1.7		*
95-13-6	1H-Indene	0.9	U	
91-20-3	Naphthalene	1.5	J	*
4565-32-6	Benzo(B)Thiophene	0.9	U	
91-22-5	Quinoline	1.4	U	
120-72-9	1H-Indole	2.5	U	
91-57-6	2-Methylnaphthalene	1.1		*
90-12-0	1-Methylnaphthalene	1.6	U	
92-52-4	Biphenyl	4.3	U	
208-96-8	Acenaphthylene	1.4	U	
83-32-9	Acenaphthene	1.3	U	
132-64-9	Dibenzofuran	1.0	U	
86-73-7	Fluorene	1.0	U	
132-65-0	Dibenzothiophene	1.1	U	
85-01-8	Phenanthrene	1.2	J	
120-12-7	Anthracene	1.1	U	
260-94-6	Acridine	2.9	U	
86-74-8	Carbazole	1.9	U	
206-44-0	Fluoranthene	1.4	U	
129-00-0	Pyrene	1.4	U	
56-55-3	Benzo(A)Anthracene	2.5	U	
218-01-9	Chrysene	2.8	U	
205-99-2	Benzo(B)Fluoranthene	2.5	U	
207-08-9	Benzo(K)Fluoranthene	2.3	U	
192-97-2	Benzo(E)Pyrene	1.9	U	
50-32-8	Benzo(A)Pyrene	2.3	U	
198-55-0	Perylene	2.5	U	
193-39-5	Indeno(1,2,3-CD)Pyrene	2.1	U	
53-70-3	Dibenz(A,H)Anthracene	1.6	U	
191-24-2	Benzo(G,H,I)Perylene	2.8	U	

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16687 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4697	09/25/91	1245
1200_PPB_PAH_STD	C4699	09/25/91	1651
20_PPB_PAH_STD	C4700	09/25/91	1742
240_PPB_PAH_STD	C4701	09/25/91	1834
600_PPB_PAH_STD	C4702	09/25/91	1927

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16687 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4703	09/25/91	2018
16687-01	C4705	09/25/91	2245
16687-01MSD	C4707	09/26/91	0029
16687-02	C4708	09/26/91	0120
16687-07	C4712	09/26/91	0447
16687-09	C4714	09/26/91	0631

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16687 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4719	09/30/91	1530
BLK01	C4720	09/30/91	1654
16687-01MS	C4721	09/30/91	1746
16687-03	C4722	09/30/91	1838
16687-05	C4723	09/30/91	1931
16687-06	C4724	09/30/91	2158
16687-08	C4725	09/30/91	2355
16687-10	C4726	10/01/91	0053
16687-11	C4727	10/01/91	0155
16687-12	C4728	10/01/91	0248

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16687 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4736	10/05/91	1348
16687-13	C4738	10/05/91	1610

5B
SEMIVOLATILE ORGANIC GC/MS PAH

Lab Name: ENSECO Contract No:

Lab Code: ENSECO Case No: 16687 SAS No: SDG No:

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS

SAMPLE ID	LAB FILE ID	DATE OF ANALYSIS	TIME OF ANALYSIS
40_PPB_PAH_STD	C4757	10/08/91	1456
BLK02	C4758	10/08/91	1658

6B
INITIAL CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16687

Instrument ID: 4500-C Calibration Date(s): 09/25/91

Maximum % RSD is 35%

Lab File ID: RRF 240= C4701	RRF 20= C4700 RRF 600= C4702			RRF 40= C4697 RRF 1200= C4699			
COMPOUND	20 PPB RRF	40 PPB RRF	240PPB RRF	600PPB RRF	1200PPB RRF	AVE RRF	%RSD
2,3-Benzofuran	0.829	0.782	0.991	0.947	0.859	0.882	9.7
2,3-Dihydroindene	0.781	0.717	0.905	0.856	0.795	0.811	8.9
1H-Indene	0.664	0.637	0.758	0.777	0.710	0.709	8.4
Naphthalene	1.791	2.456	1.744	1.736	1.536	1.853	19.0
Benzo(B)Thiophene	1.164	1.055	1.278	1.170	1.170	1.167	6.8
Quinoline	0.663	0.714	0.705	0.749	0.749	0.716	5.0
1H-Indole	0.714	0.730	0.819	0.810	0.857	0.786	7.8
2-Methylnaphthalene	0.754	0.857	0.762	0.704	0.734	0.762	7.5
1-Methylnaphthalene	0.783	0.768	0.834	0.761	0.810	0.791	3.8
Biphenyl	1.198	1.120	1.257	1.103	1.165	1.169	5.3
Acenaphthylene	1.121	1.189	1.237	1.306	1.381	1.247	8.1
Acenaphthene	0.949	0.886	1.010	0.955	0.994	0.959	5.0
Dibenzofuran	1.445	1.254	1.502	1.329	1.383	1.383	7.0
Fluorene	1.177	1.011	1.154	1.065	1.118	1.105	6.1
Dibenzothiophene	1.031	0.898	1.072	0.997	0.971	0.994	6.6
Phenanthrene	1.290	1.107	1.104	1.024	0.990	1.103	10.5
Anthracene	0.779	0.829	0.862	0.962	0.921	0.871	8.3
Acridine	0.450	0.579	0.510	0.588	0.610	0.547	12.1
Carbazole	0.601	0.763	0.720	0.771	0.764	0.724	9.9
Fluoranthene	0.960	1.015	1.108	1.031	0.980	1.019	5.6
Pyrene	1.337	1.201	1.316	1.077	0.961	1.178	13.6
Benzo(A)Anthracene	0.911	1.004	1.079	1.162	1.302	1.092	13.7
Chrysene	1.193	1.097	1.361	1.270	1.410	1.266	10.0
Benzo(B)Fluoranthene	1.603	1.169	1.664	1.582	1.714	1.546	14.1
Benzo(K)Fluoranthene	1.288	1.148	1.388	1.258	1.501	1.317	10.2
Benzo(E)Pyrene	1.342	1.023	1.431	1.276	1.440	1.302	13.1
Benzo(A)Pyrene	1.188	0.874	1.313	1.157	1.371	1.181	16.3
Perylene	0.869	0.804	1.012	0.830	1.082	0.919	13.2
Indeno(1,2,3-CD)Pyrene	1.485	1.161	1.552	1.352	1.664	1.443	13.4
Dibenz(A,H)Anthracene	1.281	1.041	1.426	1.232	1.511	1.298	14.0
Benzo(G,H,I)Perylene	1.291	1.036	1.454	1.247	1.483	1.302	13.8
D8-Naphthalene	1.427	1.234	1.524	1.534	1.347	1.413	8.9
D10-Flourene	0.928	0.840	0.921	0.848	0.916	0.891	4.8
D12-Chrysene	1.014	1.009	1.123	1.107	1.183	1.087	6.9

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16687

Instrument ID: 4500-C Calibration Date(s): 09/25/91 Time: 2018

Lab ID: C4703 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.716	18.8
2,3-Dihydroindene	0.811	0.645	20.5
1H-Indene	0.709	0.563	20.6
Naphthalene	1.853	1.642	11.4
Benzo(B)Thiophene	1.167	1.168	-0.1
Quinoline	0.716	0.650	9.2
1H-Indole	0.786	0.689	12.3
2-Methylnaphthalene	0.762	0.702	7.9
1-Methylnaphthalene	0.791	0.762	3.7
Biphenyl	1.169	1.151	1.5
Acenaphthylene	1.247	1.056	15.3
Acenaphthene	0.959	0.902	5.9
Dibenzofuran	1.383	1.366	1.2
Fluorene	1.105	1.051	4.9
Dibenzothiophene	0.994	0.987	0.7
Phenanthrene	1.103	1.110	-0.6
Anthracene	0.871	0.758	13.0
Acridine	0.547	0.457	16.5
Carbazole	0.724	0.623	14.0
Fluoranthene	1.019	0.986	3.2
Pyrene	1.178	1.266	-7.5
Benzo(A)Anthracene	1.092	0.953	12.7
Chrysene	1.266	1.200	5.2
Benzo(B)Fluoranthene	1.546	1.423	8.0
Benzo(K)Fluoranthene	1.317	1.368	-3.9
Benzo(E)Pyrene	1.302	1.323	-1.6
Benzo(A)Pyrene	1.181	0.969	18.0
Perylene	0.919	0.874	4.9
Indeno(1,2,3-CD)Pyrene	1.443	1.300	9.9
Dibenz(A,H)Anthracene	1.298	1.223	5.8
Benzo(G,H,I)Perylene	1.302	1.235	5.1
D8-Naphthalene	1.413	1.440	-1.9
D10-Flourene	0.891	0.877	1.6
D12-Chrysene	1.087	1.039	4.4

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16687

Instrument ID: 4500-C Calibration Date(s): 09/30/91 Time: 1530

Lab ID: C4719 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	1.111	-26.0
2,3-Dihydroindene	0.811	1.024	-26.3
1H-Indene	0.709	0.855	-20.6
Naphthalene	1.853	2.238	-20.8
Benzo(B)Thiophene	1.167	1.251	-7.2
Quinoline	0.716	0.628	12.3
1H-Indole	0.786	0.553	29.6
2-Methylnaphthalene	0.762	0.705	7.5
1-Methylnaphthalene	0.791	0.735	7.1
Biphenyl	1.169	1.195	-2.2
Acenaphthylene	1.247	1.390	-11.5
Acenaphthene	0.959	0.903	5.8
Dibenzofuran	1.383	1.147	17.1
Fluorene	1.105	1.006	9.0
Dibenzothiophene	0.994	1.032	-3.8
Phenanthrene	1.103	1.088	1.4
Anthracene	0.871	0.836	4.0
Acridine	0.547	0.578	-5.7
Carbazole	0.724	0.487	32.7
Fluoranthene	1.019	1.065	-4.5
Pyrene	1.178	1.329	-12.8
Benzo(A)Anthracene	1.092	0.904	17.2
Chrysene	1.266	1.159	8.5
Benzo(B)Fluoranthene	1.546	1.255	18.8
Benzo(K)Fluoranthene	1.317	1.158	12.1
Benzo(E)Pyrene	1.302	1.326	-1.8
Benzo(A)Pyrene	1.181	1.108	6.2
Perylene	0.919	0.755	17.8
Indeno(1,2,3-CD)Pyrene	1.443	1.294	10.3
Dibenz(A,H)Anthracene	1.298	1.165	10.2
Benzo(G,H,I)Perylene	1.302	1.310	-0.6
D8-Naphthalene	1.413	1.448	-2.5
D10-Flourene	0.891	0.824	7.5
D12-Chrysene	1.087	0.878	19.2

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16687

Instrument ID: 4500-C Calibration Date(s): 10/05/91 Time: 1348

Lab ID: C4736 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	0.748	15.2
2,3-Dihydroindene	0.811	0.835	-3.0
1H-Indene	0.709	0.724	-2.1
Naphthalene	1.853	2.001	-8.0
Benzo(B)Thiophene	1.167	1.415	-21.3
Quinoline	0.716	0.891	-24.4
1H-Indole	0.786	0.779	0.9
2-Methylnaphthalene	0.762	0.845	-10.9
1-Methylnaphthalene	0.791	0.890	-12.5
Biphenyl	1.169	1.366	-16.9
Acenaphthylene	1.247	1.633	-31.0
Acenaphthene	0.959	1.200	-25.1
Dibenzofuran	1.383	1.673	-21.0
Fluorene	1.105	1.346	-21.8
Dibenzothiophene	0.994	1.133	-14.0
Phenanthrene	1.103	1.182	-7.2
Anthracene	0.871	0.954	-9.5
Acridine	0.547	0.626	-14.4
Carbazole	0.724	0.710	1.9
Fluoranthene	1.019	1.190	-16.8
Pyrene	1.178	1.484	-26.0
Benzo(A)Anthracene	1.092	1.077	1.4
Chrysene	1.266	1.207	4.7
Benzo(B)Fluoranthene	1.546	1.366	11.6
Benzo(K)Fluoranthene	1.317	1.226	6.9
Benzo(E)Pyrene	1.302	1.084	16.7
Benzo(A)Pyrene	1.181	1.104	6.5
Perylene	0.919	0.876	4.7
Indeno(1,2,3-CD)Pyrene	1.443	1.243	13.9
Dibenz(A,H)Anthracene	1.298	1.108	14.6
Benzo(G,H,I)Perylene	1.302	1.182	9.2
D8-Naphthalene	1.413	1.480	-4.7
D10-Flourene	0.891	0.969	-8.8
D12-Chrysene	1.087	0.824	24.2

7B
CONTINUING CALIBRATION DATA
PAH COMPOUNDS

Lab Name: ENSECO Lab Code: ENSECO Case No: 16687

Instrument ID: 4500-C Calibration Date(s): 10/08/91 Time: 1456

Lab ID: C4757 Initial Calibration Date: 09/25/91

Maximum %D is 35%

COMPOUND	INITIAL AVE RRF	40 PPB RRF	%D
2,3-Benzofuran	0.882	1.056	-19.7
2,3-Dihydroindene	0.811	0.900	-11.0
1H-Indene	0.709	0.799	-12.7
Naphthalene	1.853	1.955	-5.5
Benzo(B)Thiophene	1.167	1.414	-21.2
Quinoline	0.716	0.611	14.7
1H-Indole	0.786	0.606	22.9
2-Methylnaphthalene	0.762	0.782	-2.6
1-Methylnaphthalene	0.791	0.901	-13.9
Biphenyl	1.169	1.285	-9.9
Acenaphthylene	1.247	1.648	-32.2
Acenaphthene	0.959	1.140	-18.9
Dibenzofuran	1.383	1.479	-6.9
Fluorene	1.105	1.248	-12.9
Dibenzothiophene	0.994	1.276	-28.4
Phenanthrene	1.103	1.371	-24.3
Anthracene	0.871	1.111	-27.6
Acridine	0.547	0.564	-3.1
Carbazole	0.724	0.798	-10.2
Fluoranthene	1.019	1.348	-32.3
Pyrene	1.178	1.509	-28.1
Benzo(A)Anthracene	1.092	1.310	-20.0
Chrysene	1.266	1.426	-12.6
Benzo(B)Fluoranthene	1.546	1.484	4.0
Benzo(K)Fluoranthene	1.317	1.492	-13.3
Benzo(E)Pyrene	1.302	1.264	2.9
Benzo(A)Pyrene	1.181	1.234	-4.5
Perylene	0.919	1.053	-14.6
Indeno(1,2,3-CD)Pyrene	1.443	1.316	8.8
Dibenz(A,H)Anthracene	1.298	1.229	5.3
Benzo(G,H,I)Perylene	1.302	1.301	0.1
D8-Naphthalene	1.413	1.539	-8.9
D10-Flourene	0.891	0.934	-4.8
D12-Chrysene	1.087	0.938	13.7

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16687 SAS No.: SDG No:

Lab File ID (Standard): C4703 Date Analyzed: 09/25/91

Instrument ID: 4500-C Time Analyzed: 2018

	IS#1 (ACN) AREA	#	IS#2 (PHN) AREA	#	IS#3 (BAP) AREA	#
12 HOUR STD	312000		479000		392000	
UPPER LIMIT	624000		958000		784000	
LOWER LIMIT	156000		248000		196000	
SAMPLE NO.						
16687-01	384000		608000		370000	
16687-02	256000		409000		200000	
16687-07	275000		422000		196000	
16687-09	210000		333000		219000	
16687-01MSD	364000		581000		406000	

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16687 SAS No.: SDG No:

Lab File ID (Standard): C4719 Date Analyzed: 09/30/91

Instrument ID: 4500-C Time Analyzed: 1530

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	335000	488000	425000
UPPER LIMIT	670000	976000	850000
LOWER LIMIT	168000	244000	212000
SAMPLE NO.			
16687-03	618000	993000	560000
16687-05	304000	414000	251000
16687-06	179000	247000	184000
16687-08	292000	448000	352000
16687-10	449000	782000	705000
16687-11	355000	721000	834000
16687-12	495000	769000	743000
16687-01MS	693000	1190000	715000
BLK01	412000	823000	723000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16687 SAS No.: SDG No:

Lab File ID (Standard): C4736 Date Analyzed: 10/05/91

Instrument ID: 4500-C Time Analyzed: 1348

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	2400000	4220000	4110000
UPPER LIMIT	4800000	8440000	8220000
LOWER LIMIT	1200000	2110000	2060000
SAMPLE NO.			
16687-13	2030000	3590000	3480000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ENSECO Contract:

Lab Code: ENSECO Case No: 16687 SAS No.: SDG No:

Lab File ID (Standard): C4757 Date Analyzed: 10/08/91

Instrument ID: 4500-C Time Analyzed: 1456

	IS#1 (ACN) AREA #	IS#2 (PHN) AREA #	IS#3 (BAP) AREA #
12 HOUR STD	276000	370000	342000
UPPER LIMIT	552000	740000	684000
LOWER LIMIT	138000	185000	171000
SAMPLE NO.			
BLK02	362000	511000	424000

IS#1 (ACN) = D10-ACENAPHTHENE
IS#2 (PHN) = D10-PHENANTHRENE
IS#3 (BAP) = D12-BENZO(A)PYRENE

UPPER LIMIT = + 100% of internal standard area
LOWER LIMIT = - 50% of internal standard area

Column used to flag internal standard area values with an asterisk

NON-RESPONSIVE

N

RESULTS FOR THE PRAIRIE DU CHIEN - JORDAN AQUIFER:
FOURTH QUARTER, 1991

NON-RESPONSIVE

RESULTS FOR THE PRAIRIE DU CHIEN - JORDAN AQUIFER.
THIRD QUARTER, 1991

NON-RESPONSIVE

NON-RESPONSIVE